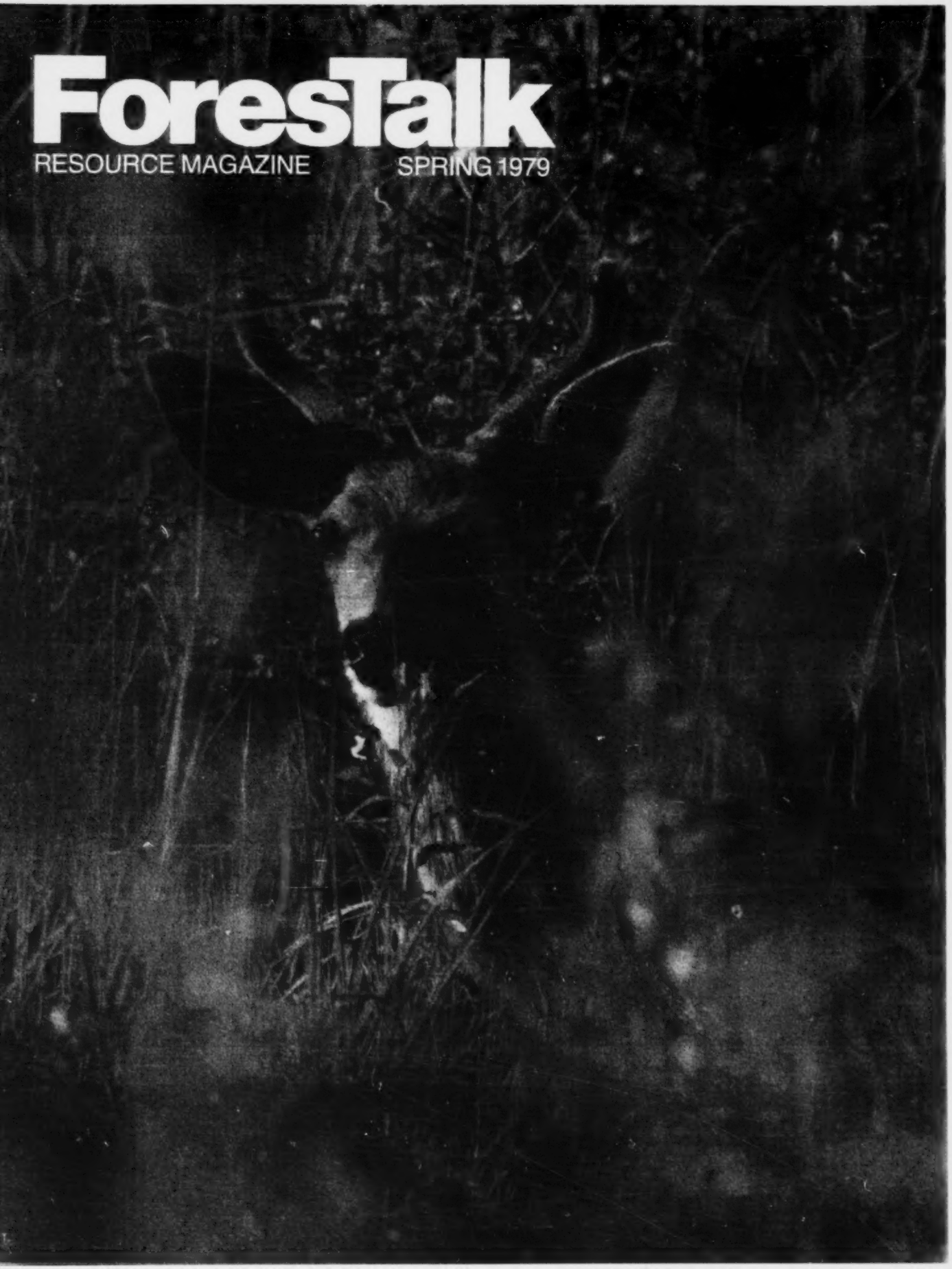
ForesTalk

RESOURCE MAGAZINE SPRING 1979



2007-04839/

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Volume 3 Number 1 Spring 1979

Editor: **Garth Coward**
Assistant Editor: **Cameron Young**
Design: **Ken Seabrook**

ForesTalk Resource Magazine is published quarterly by the Province of British Columbia, Ministry of Forests, Information Services, 1450 Government Street, Victoria, B.C. V8W 3E7 Telephone (604) 387-5985. Designed to encourage interest, discussion and understanding of British Columbia's forest resources, ForesTalk is available free on request. Any material reprinted must give credit to the magazine. Second class mailing registration No. 3863. International Standard Serial Number ISSN 0700-1770. ForesTalk welcomes submissions from professional writers and photographers on themes related to the B.C. forests and their uses. Address enquiries to the assistant editor.

Deputy Minister of Forests:
T.M. Apsey
Director of Information Services:
E.H. Lyons

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A province-wide analysis of British Columbia's forest resources is being carried out; long range forest and range management programs are being developed; forestry research is being strengthened and better coordinated; intensive forest management projects are under preparation.

These, and many other forestry and range programs under development will be reported on in future issues of ForesTalk.

Tom Waterland

Hon. Tom Waterland, *Minister of Forests*

Province of British Columbia — Ministry of Forests

Forests are for everyone and everything, including this inquisitive deer photographed by freelance photographer Bob Herger. Deer are just one of thousands of species of animals, plants and trees whose supporting ecosystems come under the protection of British Columbia's 93 Ecological Reserves.

FEATURES

Cashing In The Chips — An energy-conscious forest industry is continually devising better ways to convert sawmill residue into usable energy.
by Grant Ellis

Nature On Reserve — The 93 Ecological Reserves throughout B.C. retain undisturbed, unique and representative samples of British Columbia's many and diverse ecosystems.
by Diane Swanson 10

The Road North Part Two — In the second part of his northern report Charles Lillard describes northwestern B.C. In many ways this is B.C.'s true frontier.
by Charles Lillard 24

Alpine: The Last Outpost — Stunted and windblown, trees form the dominant feature of the high-elevation alpine landscape. 22
photo essay by Gary and Judy Green

ForesTalk interviews Ken Farquharson — Ken Farquharson analyzes the B.C. forest landscape from an environmentalist's point of view and comes up with some challenging observations.
by Gord Price 14

DEPARTMENTS

Letters To The Editor 32

Collections — From springboards to wood gas, there's more to the forests than meets the axe.
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People: Andy Dick — Once a builder of steel warships, today Andy Dick is a builder of the graceful cedar canoe of the Coast Salish Indians.
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by Enid K. Lemon

SPECIAL FEATURES

The Canadian Forestry Association of British Columbia — The CFA is dedicated to the principle that our forest resource should be conscientiously managed for the benefit of future generations.
by Gord Price 2

The Deadly Enemy — Although nature is responsible for many forest fires, another deadly enemy of the forest is the people who travel into the woods and unwittingly create fire hazards. 17

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People: Andy Dick — Once a builder of steel warships, today Andy Dick is a builder of the graceful cedar canoe of the Coast Salish Indians. by Grant Ellis 30

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CASHING IN THE CHIPS

by **Grant Ellis**

Wood waste is unavoidable in the forest industry, even in the most efficient sawmill. Bark is stripped from logs by jets of water or mechanical claws; trim-ends, slabs, and edgings fall away with the cuts; sawdust piles up; shavings accumulate at planer mills. Although a number of steps have been taken to make better use of this waste, for years wood waste has been our close companion.

Sawdust was everywhere: in dolls, in icehouses, on floors, in chicken houses, in compost heaps. Many a country home was warmed with a stove fitted with a sawdust hopper. We took to bark for landscaping. Shavings wound up on the grounds of midways or under the hooves of horses prancing in the big top, and sometimes they were used for land fill.

Biomass:
A New Energy Catchword

Solar energy, because it makes things grow, can be said to be 'trapped' in the tissues of plants and animals. Scientists needed a word to describe all this combustible material (stored as cut wood, trees, grass, shrubs, plants, garbage), and they came up with *biomass*. The burning of hog fuel is one outstanding example of converting biomass to usable energy.

In fact, a whole new biomass industry is springing up across the continent. Already operating in Parks Siding near Trail is Western Energy's biomass conversion plant which takes wood waste from local sawmills and turns it into a burnable fuel which is then marketed to neighbouring industries.

Trim ends, slabs, edgings and sawdust pile up as sawmills convert logs to lumber. Although this wood waste is still burned in traditional beehive burners, more and more of it is being used to fuel the forest industry's energy needs.

But despite all these uses — and many others — there remained an abundance of the stuff. We bulldozed it into the forest to let the woods reclaim it. We burned it, (and still do) in "teepees," "beehives," and smokeless burners. B.C.'s mountain ranges of sawmill residue continued to grow. Then came a sort of revolution in the utilization of wood waste, with the pulp and paper industry leading the way.

Pulp mills had always converted logs to chips or groundwood for pulping. (Chips are also used to produce Masonite, beaverboard, particle board and chipboard.) But in Port Alberni in 1935 the International Pulpwood Supply Company (IPSCO), owned by Crown Zellerbach, came up with a better idea — making chips from sawmill residue. Interestingly, IPSCO had no sawmill of its own and made use of hand picked debarked wood slabs from the then new Bloedel, Stewart and Welch sawmill. These slabs were chipped and sent by barge for pulping in Port Townsend and Port Angeles in Washington. This was the first time in North America, and possibly the world, that wood waste was used for making chips.

By 1947 Bloedel, Stewart and Welch adopted this concept and constructed the first pulp mill in B.C., and probably in North America, to operate on 100 per cent wood waste chips. (IPSCO, with its chip supply cut off, moved its operations to Vancouver.)

By the mid-1950s several coastal B.C. pulp mills were constructed which utilized, at least in part, chips made from wood waste. Also, improved log debarking technology now allowed any good sized B.C. sawmill to get into the business of making and marketing chips. On the strength of this affordable, abundant resource, three new pulp mills sprang up in Prince George in the 1960s, turning it into a world pulp centre almost overnight.

Throughout B.C. chips for pulp became an important sawmill by-product. Eurocan, for example, now sends 16 rail cars of chips from its Houston sawmill to its Kitimat pulp mill. MacMillan Bloedel sends barges of chips from its Chemainus Sawmill to its pulp mills at Harmac and Powell River, and is doing a brisk export trade as well.

The pulp industry was soon taking a huge bite out of the industry's waste wood, but there remained — and remains — a huge surplus of wood waste, with great potential as an energy resource. And the industry was already starting to use it that way.

Fossil fuels, particularly oil and natural gas, have always been an attractive energy source to the forest industry because of their ease of handling, clean burning qualities, and until recently, low cost. But times have changed. The forest industry, which by some estimates uses about 23 per cent of all natural gas consumed in the province and about 65 per cent of all energy used by industry, is taking a second look at an old idea: supplying its energy needs by burning its own wastes, either directly, or in a form known as hog fuel.

The name 'hog fuel' may suggest that wood is being fed to the pigs (not as farfetched as it sounds, since some B.C. businessmen, with the help of government grants, are already turning wood into fodder). But hog fuel gets its name from the hog or hogger that pulverizes wood waste into usable fuel. Typically, wood fragments move over a series of anvils where heavy knives or hammers chop and shred it into a size more easily utilized in boiler furnaces.

The hog fuel idea is not new. At least one B.C. sawmill has used it to supply its own heat and power for 40 years. Other large sawmills burned wood waste in 'Dutch ovens' (without hogging it first) to provide steam and electrical energy. But many mills have not considered hog fuel until now, when buying other forms of energy and disposing of huge quantities of waste are beginning to hurt. One gravity-packed unit (G.P.U.) containing 200 cubic feet of loosely packed hog fuel can provide the energy of from $10 to $20 worth of natural gas. These figures vary according to the quality of the hog fuel, transportation costs, boiler efficiency, and so on.

To give an idea of the money at stake: A Telkwa Foundation study found that two mills at Smithers spent nearly $500,000 between them for one year's gas and electricity. Small wonder the industry is moving in the direction of energy self-sufficiency.

Crown Zellerbach is spending $25 million to convert its Elk Falls mill to hog fuel fired equipment. Saving: 600,000 barrels of oil yearly.

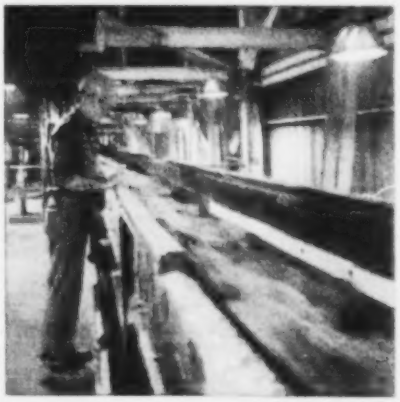
MacMillan Bloedel has just completed a similar $22 million conversion at Port Alberni. Saving: 250,000 barrels of oil yearly.

B.C. Forest Products recently installed a $13 million hog fuel boiler at its Crofton pulp mill. The boiler can burn almost anything — including the plant's own sludge. Saving: 400,000 barrels of oil yearly.

Weldwood of Canada's new Williams Lake plant includes hog fuel steam generation for veneer dryers, plywood presses and plant heating.

Another development of the kraft pulp industry is to recycle its own wastes as fuel. Of all the materials found in wood chips entering the mill, only 50 per cent become pulp; the other half heads for the sewer or to the recovery boilers along with spent chemicals. All chemical pulp mills in B.C. now heat this slurry to evaporate the moisture, reducing it to a syrup called 'black liquor' that is about 55 per cent solids. The solids head for the recovery boiler to become fuel; the chemicals are processed, reclaimed, and recycled.

Hog fuel is conveyed to MacMillan Bloedel's Port Alberni pulp and paper complex from the company's Somass sawmill half a mile away and is burned in boilers to provide steam and some electrical energy for the mill.



At MacMillan Bloedel's Port Alberni pulp and paper complex, engineer Bob Flunn holds a handful of hog fuel. Hog fuel gets its name from the hog or hogger that pulverizes wood waste into usable fuel.

Burning Hog Fuel: It's Not That Easy

If you're wondering about all the research into the burning of waste wood, just try pouring wet sawdust on a fire. Similarly, hog fuel which is damp has a tendency to settle and smother a fire. Most systems for burning it aim at keeping it dispersed. It might ride on a column of hot air or on a heaving bed of hot sand kept in mid-air by a powerful draft. Multiple chambers may be used for multi-stage burning.

One way around these problems is densification — compressing the particles — the most familiar form of which is the compressed fireplace log. This process, called "briquetting," makes the fuel easier to handle and burn, and yields a more consistent heat. Like hogging fuel, it's not a new process: the first U.S. patent was issued in 1880. But current processes produce a product that approaches coal for burning characteristics.

For example, the Cariboo Pulp and Paper plant at Quesnel meets most of its energy requirements not only by making extensive use of hog fuel, but also by generating much of its steam needs from waste liquor solids recovered in the pulping process.

Many more energy conversion projects could be mentioned, but before we get too excited at the prospect of an energy self-sufficient forest industry, there are these factors to consider:

Conversion to hog fuel is costly. There must be a clear economic reason for the change. Hog fuel is not readily available in all areas, and is expensive to transport. Nor can most areas guarantee a constant wood waste supply; too much depends on the timber market, the rate of timber harvest, fires, transportation, and other factors. In short, only certain areas provide real potential for the use of hog fuel for energy.

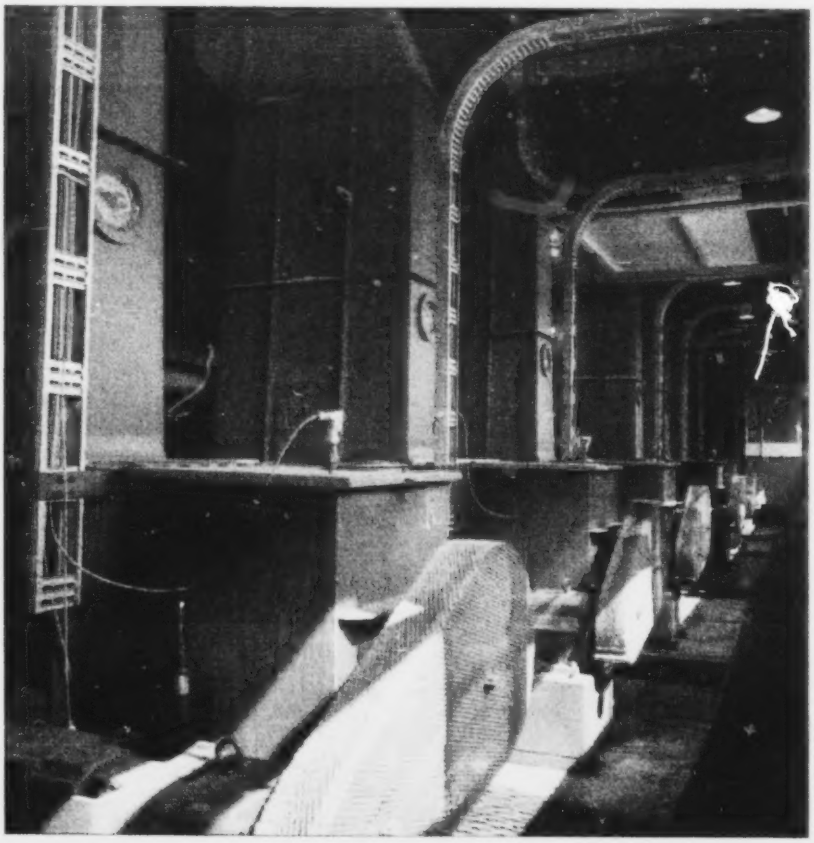
Another major drawback is that most hog fuel energy systems still require a natural gas or oil back-up system. While many plants will use hog fuel for plant heating, for providing steam for lumber kilns, for generating electricity and for heating driers, they will continue to rely on B.C. Hydro for additional electrical power to drive their machinery.

The cost of conversion to hog fuel, the questionable availability of hog fuel in some areas, and the continued dependence on public utilities remain as stumbling blocks to the industry in its trend towards energy self-sufficiency. To help offset these obstacles, and to add more fuel to the fire, several agencies are encouraging the industry to keep considering hog fuel as an alternative energy source.

Formed in June, 1977, the B.C. Wood Waste Energy Coordinating Committee aims at providing industry with the information it needs to make its decisions about energy. The committee, representing federal and provincial government agencies and the forest industry, commissioned "An Evaluation of Wood Waste Energy Conversion Systems," a guide to selecting equipment for wood waste use. Other publications and releases pursue the same basic goal: helping industry use its own waste for energy.

On July 4th, 1978, the federal

By burning hog fuel to supply much of its own energy needs the British Columbia Forest Products' pulp mill at Crofton saves 400,000 barrels of oil annually.



At Crown Zellerbach's Fraser Mills lumber and plywood mill in Coquitlam 95 per cent of the plant's energy requirements are met by burning hog fuel and bark. Shown here are the hoppers which feed hog fuel into the mill's three Dutch ovens.

government announced a $380 million program of incentives for energy research, the lion's share of which is aimed at wood waste conversion. Of the total, $143 million encourages the forest industry to switch to wood waste fuel from oil and gas. Another $40 million will be available to encourage research into other uses of biomass.

The federal government has also announced that it will guarantee loans of up to $150 million to help establish biomass-fueled electrical generating plants that will operate on the *co-generation* principle. That is, they will be fueled by, and primarily used by, the forest industry; but any surplus electrical power not needed by industry will be fed into the provincial power grid for general consumption.

In the words of Conrad Guelke, Manager of B.C. Hydro's Generation Planning Department, hog fuel is "one of a number of alternative powers that may supplement" present energy sources.

It seems unlikely that the forest industries could ever become energy-independent. But Norman Gish of the B.C. Energy Commission states that the industry is already producing half of its total energy requirements. Many other projects are under way to put hog fuel to work as there is still a considerable wood waste surplus available.

Looking further ahead, there is a great energy potential in the huge quantity of slash left by loggers. The Canadian Forestry Service's Pacific Forest Research Centre in Victoria was recently awarded a $58,000 contract for the study of how slash on Vancouver Island could be converted to pulpwood and hog fuel. Their conservative estimate: there are more than 40 million cubic feet of logging residue available annually just on Vancouver Island. If all of it were neatly stacked, converted to hog fuel, and burned efficiently, it could produce, says the Centre, about 1.7 billion kilowatt hours of electricity. That's about the same as B.C. Hydro's total output in some months.

Unfortunately, it's a long haul from the forests to a usable kilowatt, and the time when our electricity might come from forest waste seems remote. But with so much potential energy at stake, the matter bears looking into in a most serious way.

Nor does the present research end here. If we have already converted trees to paper, cloth, plastic, gas, oil, and even cattle feed, who knows where research will lead? Don't hold your breath, but it looks as if one of B.C.'s biggest nuisances — wood waste — could turn into one of our greatest resources.

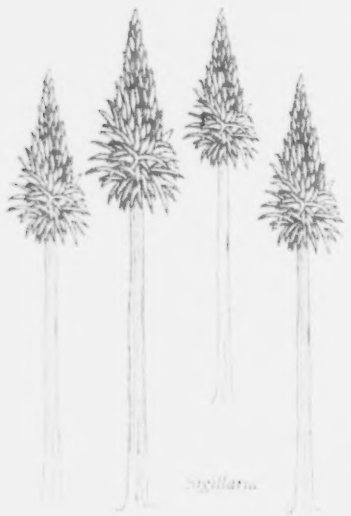
Fraser Mills' engineer Walter Mitchell inspects a steam turbine engine powered by burning wood waste from the plant's sawmill and planer mill.

Engineer Walter Mitchell stands back from the intense heat of one of three Dutch ovens at Crown Zellerbach's Fraser Mills lumber and plywood plant. These ovens burn hog fuel and bark to generate almost all the electrical energy required by the plant.

COLLECTIONS

Edited by Michael Gregson

The next issue of Collections will be devoted entirely to printing material furnished by readers, so dust off your memory and send your contributions to: ForesTalk Collections, Information Services, Ministry of Forests, 1450 Government St., Victoria, B.C. V8W 3E7. Please be brief, accurate, and include the source of the information wherever possible.



A Tree Fern Licence?

Trees such as *Lepidodendron* and *Sigillaria* aren't exactly household words, yet 165 million years ago it would have been hard to talk about any other kind. That's when these ancient tree ferns covered much of B.C.

Tree ferns are literally ferns with tree-like trunks. Ancient forests contained great numbers of these giant plants. *Lepidodendron* attained heights of 100 feet and trunk diameters of six feet. With trunks built up of diamond-shaped leaf scars, the tree ferns resembled modern palms.

Lepidodendron and *Sigillaria* are long extinct. Descendants, however, are still found on earth today. Modern tree ferns resemble palms even more than their ancestors, and can attain almost the same heights — up to 70 feet. These are to be found only in the tropics.

Modern tree ferns are used for ornamental purposes, and some provide lumber. Their contribution to man's economy is tiny, however, compared to that of their ancestors, whose compressed remains today provide B.C. with our substantial coal deposits.

Wood 'N Teeth

In the early (and painful) days of dentistry, a major problem was how to fix false teeth firmly in the mouth. One solution was to use pegs made of hickory wood. A dental manual of 1824 describes their insertion: "A pivot of the toughest wood is inserted, so prepared to enter each cavity without much force, where it will soon swell and make the tooth very permanent and durable . . . This pivot may be renewed by the patient when necessary."

Renewal was indeed necessary — the hickory, like any piece of wood, had a tendency to split.

Though false teeth were usually made from some form of ivory, the Romans are reported to have made teeth entirely out of wood.

Boarding Up

The great size of the tree is the reason these fallers are standing on springboards.

Springboards were stout, iron-tipped planks notched into the trunk of a tree. Fallers could not work easily around such big timber unless they had a level surface on which to stand, and springboards were used to get up to a good working part of the tree. Using two boards per man, fallers would "board" their way up as high as 20 feet above such obstacles as steep ground, swelled-butts and "school marms." A faller would stand on one board while cutting a notch above for the other.

In logging sports today, the Springboard Chop contest preserves the old skillful use of springboards. Contestants start on the ground. They cut a notch, insert the board, and then chop half way through the pole. They can't chop all the way through — to complete the contest, they must go to the other side of the pole, insert the board again, and finish chopping through the pole from the new position.

Working on a springboard with axe and saw is no mean balancing act. But surely the all-time record for springboard work is this: George Wasson, a Weyerhaeuser employee, once boarded his way 186 feet up a tree, and then cut off the top.

Hunting The Elusive Mahogany

The mahogany tree is found (but only two in every hectare or so) in the tropical forests of Central and South America. Until recently, loggers relied on the specialized skills of a mahogany hunter to locate the tree and mark the trail leading into it.

Today aerial survey has eliminated the need for ground search. But the mahogany hunter's keen eye is still depended on to judge the sound quality of each tree located, since building a road to log just one tree must be worth the expense involved.

Logging of mahogany takes place in the dry season. Work is done on a non-stop, 24-hours basis. Falling of the tree — up to 100 feet tall — is done by axe. Logs are boomed in jungle rivers and towed to the sea.

Mahogany is so valuable to the ship building and furniture industries that every care is taken in the milling operation to get the most out of a log. However, it is estimated that only 50 per cent of all logs cut are ever loaded aboard ships for export. The other 50 per cent are lost in sudden river floods or to insect damage.

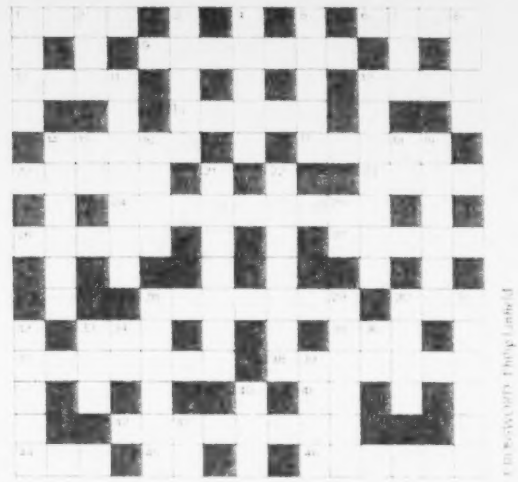
Wood Gas

In Holland on September 18, 1941, Jan Bessembinders and Jantje Huisman arrived at the Onstwedde Church for their wedding. There was no gasoline for wedding cars; Hitler had taken it all. Instead, the car sported a cylindrical tank at the rear, from which grey smoke poured. A rooftop box carried firewood. (The bride's brother, indignant at the spectacle, stayed at home.)

The wedding car was powered by wood gas. It took three hours to fire up the generator, and pick-up was poor. But it worked. The same substance has heated and illuminated cities for generations and is being investigated anew today.

Through a process known as pyrolysis, in which wood is heated in airtight ovens, in chambers with various gases, or in kilns supplied with limited and controlled amounts of air, a wood gas (as well as charcoal and oil) can be produced. Although this technology has been around for over 100 years, it still remains to be perfected. All the same, the use of dependable wood gas as an alternative energy source holds high promise for the future.

ForesTalk Crossword



Crossword Help Label

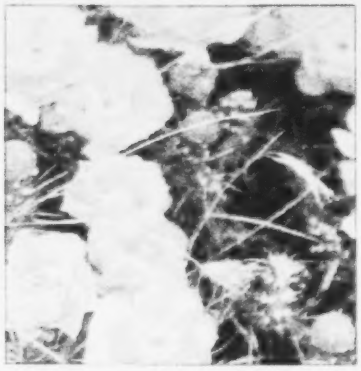
ACROSS

1 a long, squared piece of supporting timber, a happy person may do it at you (4)
6 a large branch (4)
9 the cropped top or limbs of a tree which produce a round head of branchlets (7)
10 without one people would always be outside (4)
12 a baton, or staff, often magical (4)
13 botanical grouping containing tree species of common nature (5)
14 wet as a sword, straw used to protect roots of young trees (5)
17 work implements (5)
20 passionate insect fans may become frenzied victims of wood beetle (5)
23 a raised wooden platform (4)
24 a specialty tended tree and plant garden (9)
26 do the Dutch ever lose these wooden objects down their drains? (5)
27 a baby bird does this, so does a person looking out from behind a tree (5)
28 aromatic gum or resin of Javanese tree (7)
30 I'm an ancient tree — so are ... (3)
33 the major unit of geological time: coal comes from trees that grew in the carboniferous ... (3)
35 it comes in winter (3)
37 immature pine fruit (7)
38 species of leafed evergreen tree with reddish, often peeling bark and found in coastal British Columbia (7)
41 in footnotes, reference to previously cited title (2)
42 surely not a mill where an orchestra plays? (8)
44 safeguards against pollution will make this cleaner (3)
45 MacMillan Bloedel (2)
46 in autumn, some foliage departs (6)

DOWN

1 dogs and trees are both associated with it (4)
2 ancient trees sprouted a long time (3)
3 when it breaks, the cradle will fall (5)
4 used in construction, this is stiff and wooden; can be so in politics too (5)
5 it coats things in winter (5)
7 labour union important in the B.C. forest industry (3)
8 they become blossoms (4)
11 the leaves of the tree (7)
12 they could be made of wood, or they could work in the woods (7)
14 wood hammer (6)
15 a French one (2)
16 wheeled vehicles seen frequently (4)
18 American city where they are more cars than trees (2)
19 not complex (6)
21 a palm fruit, or an avid fan of hot chocolate (7)
22 California Redwood (7)
25 most trees grow in this direction (2)
28 the grand fir of southern B.C. used in pulp, plywood and crates, and which has a pungent resin is also a kind of ... (6)
29 animals from budworms to beavers do this (6)
30 in Tibet, the Sasquatch-like creature is known by this term (4)
31 residual material from a sawmill converted to chips for making pulp (4)
32 British Columbia Independent Logging Association (5)
33 the kind of being that Treebeard is in "Lord of the Rings" (3)
34 in respect of, regard to (2)
36 abbreviated term for volume measurement (2)
39 a small stream (4)
40 a forest sprite or elf (3)
43 a province to take note of (2)

NATURE ON



One of B.C.'s most spectacular forests, a Sitka spruce stand near Port Chanal in the Queen Charlottes, will never be logged. Nor will man ever interfere with the rare Mara Meadow orchids near Salmon Arm, or the Stone sheep habitat at Gladys Lake on the Spatsizi Plateau. These three sites, and 90 others like them occupy a special position in the province. They have been set aside as Ecological Reserves. You won't see them advertised anywhere; they aren't marked on any tourist map. However, although a few very fragile reserves are accessible to the public only by special permit, the rest are normally open for such uses as hiking, bird watching and photography, as well as for their prime uses — research and education.

But why go to all the trouble of carefully setting aside these particular parcels of land? Because in each reserve there is something important to preserve. In some cases the special feature is a unique plant, animal or landform; more often it is an entire ecosystem typical to a particular region — a complete system of plants, animals and their environment.

The Port Chanal Reserve, for instance, was not created solely to protect the mature Sitka spruce. It is also a nesting ground for many types of birds, especially peregrine falcons and their seabird prey.

Timber harvesting, mining and domestic grazing are forbidden in any Ecological Reserve. So are hunting, fishing and camping. This has lead some people to ask why as many as 93 areas of Crown land should be tied up for apparently such a restricted purpose.

An editorial in *The Vancouver Sun* once condemned Ecological Reserves for "taking large chunks of land out of forestry." But the total area reserved is

RESERVE

by Diane Swanson

When this picture of Dr. V.J. Krajina inspecting mature Sitka spruce near Port Chanal on the Queen Charlotte was taken 30 years ago, the idea of setting aside select areas of the province to preserve both unique and representative ecological features was just in its infancy. Today there are 95 Ecological Reserves throughout B.C. with more still to come.

85,000 hectares — less than one tenth of one per cent of the total area of B.C. Of this, less than a quarter is productive forest land. Even if proposals for future Ecological Reserves are taken into account, the overall area is not expected to exceed one half of one per cent of the province.

Dr. Bristol Foster, coordinator of the Ministry of Land, Parks and Housing's Ecological Reserves Unit and the person responsible for the reserves, thinks that people have felt threatened needlessly. "There has never been an Ecological Reserve created over the objection of even one agency," he says. "Approval of reserves is sought from all concerned government departments and industries."

B.C. already has a half million hectares in national parks and four and a half million hectares in provincial parks, recreation areas and wilderness conservancies. Why have Ecological Reserves too?

According to Gordon Macnab, Chief of Planning at Parks Branch, "The biggest difference between provincial parks and Ecological Reserves is that provincial parks conserve natural environments for people to enjoy and appreciate. Ecological Reserves were created to *conserve* the ecosystems and the landforms for scientific and educational purposes."

As such, the only uses really encouraged in Ecological Reserves are scientific or educational. With a permit, scientists may catch a sample of mice or even paint sea gulls pink, but their actions must be minimally disruptive to the reserve.

"The most important characteristic of Ecological Reserves is their permanence," says Dr. Bristol Foster. "This allows continuity of research over decades or even centuries. We cannot predict the sort of questions that will be asked of our Ecological Reserves in 10 or 100 years."

Clearly, the quickest way to destroy that permanence would be to overuse the reserves.

The first priority in establishing reserves is given to virgin lands. Botanist, Dr. V.C. Brink, member of the Ecological Reserve Advisory Board and President of the Federation of B.C. Naturalists says, "There has been strong emphasis on forest sites so far — rightly so. Now alpine areas and estuaries need more attention. We critically need reserves in the lowland, but most of that land is owned outright."

All reserves are established on Crown land, and the Ecological Reserve Unit has no funds with which to purchase privately owned land. Also, a piece of Crown land under consideration for a reserve may form part of a forest company's Tree Farm Licence or be under lease as grazing land to ranchers. To get around these problems, certain land trade-offs may be made whereby the Crown provides alternate forest or grazing land in exchange for the desired reserve sites.

The first reserves were set up in 1971 under the Ecological Reserve Act and were administered by the De-

(map) British Columbia has the greatest natural diversity of any province in Canada. Samples of these diverse ecosystems are set aside in Ecological Reserves for research and educational purposes, but many reserves are also open to the public for hiking, photography, bird watching and even cross-country skiing.

partment of Lands, Forests and Water Resources. In 1976 the separate Ecological Reserve Unit coordinated by Bristol Foster was moved to the newly created Ministry of the Environment. In 1978 the unit shifted to its present Ministry.

The establishment of ecological reserves in B.C. was part of a worldwide movement directed at conserving undisturbed examples of the world's many and varied biological communities. U.B.C. botanist Dr. V.J. Krajina, who has been at the forefront of ecological studies in this province, was a prime mover in promoting this concept. Today, he feels that if each biological community now protected by reserves were reserved in triplicate as insurance against floods and fires, B.C. would need a minimum of 150 such reserves — an additional 57 over the present number. Of course, as new communities and unique features are still being discovered, that figure will grow even higher.

Any member of the public can suggest areas to be set aside for reserves. This request is then studied by the Ecological Reserve Unit, and if it seems justified, it is passed on for approval to an advisory board.

This board is composed of representatives from government, industry, and the general public. (The Ministry of Forests is represented by its Chief Forester, Bill Young.) Finally, a reserve receives its specially designated status through an Order-in-Council.

When land is acquired for use as an Ecological Reserve, whole units, such as islands or complete watersheds, are ideal. When this is not possible, the well-being of the reserve will inevitably be affected by the land surrounding it.

By providing a buffer zone, parks can be good neighbours for reserves — especially compared with forest land which may be logged right to the reserve's boundary. Over one third of the present area in reserves is surrounded by provincial parks. However, the advertising given to parks also draws people to reserves. Says Bristol Foster: "Generally, we try to avoid placing Ecological Reserves near those parks which are now, or may be heavily used."

For the same reasons, towns and villages do not make good neighbours. Ignorance, vandalism or plain overuse can cause a lot of damage to Ecological Reserves. In the lower mainland especially, some reserves are already overused — even by well-meaning naturalists.

However, where reserves are close to people, they are better able to serve as outdoor classrooms. One reserve at Ten Mile Point in Victoria is often used by students at the University of Victoria. Biology professor Dr. Alan Austin frequently takes small classes to study shore life at low tide.

But about one half of the existing reserves are relatively inaccessible to the public, and remote sites will be chosen whenever possible for the location of future reserves.

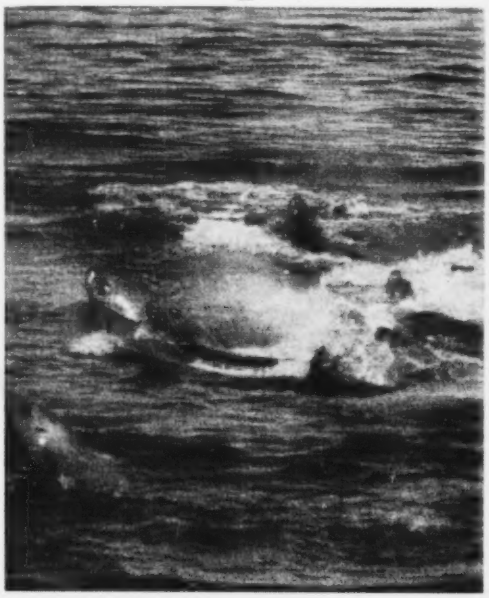
The size of present Ecological Reserves ranges from the .61 hectares set aside for a colony of double-crested cormorants at the Canoe Islets to the 33,185 hectares at Gladys Lake on the Spatsizi Plateau. The average reserve covers about 925 hectares.

Protecting Ecological Reserves is a problem. At each site prohibited uses are posted on signs which plead: "Please Help Us Protect This Area." But abuses occur.

The Ecological Reserves Unit of only two people is unable to police its widely dispersed sites, but sometimes field officers from other ministries note problems.

The public is also helpful in reporting misuses. The Federation of B.C. Naturalists, for example, has adopted a watchdog function toward reserves such as one east of Vernon. On their regular visits they have reported some vandalism.

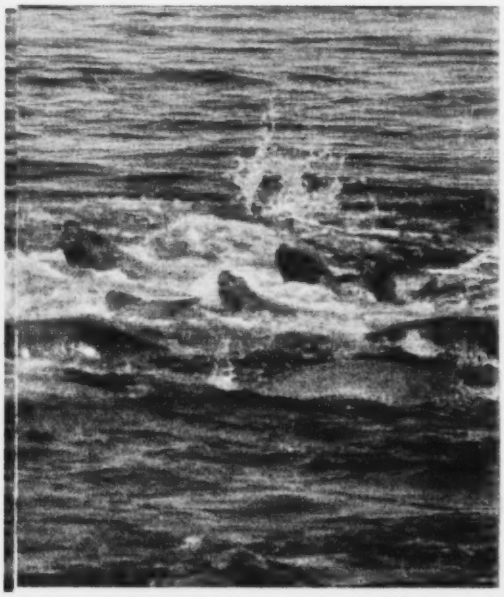
In most cases there are no plans to protect Ecological Reserves from natural intrusions like disease, insect infestation or even fire. Natural change is a part of ecosystems. This change is of as much interest and value to the scientist as the living organisms contained in these ecosystems.



Because of the ban on hunting in ecological reserves certain mammals with declining populations, such as the sea lions shown here, have been able to slowly increase their numbers.

The Ministry of Forests requires the Ecological Reserves Unit to state its preference for fire management in each reserve. In some, natural fires will be left to burn, as fire is a natural component of the ecosystem. In others, the Ministry of Forests will be asked to reduce litter through controlled burning so that fire-dependent species can continue to survive. But

Ecological Reserve staff member Trudy Carson holds a Cassin's auklet, one of many sea birds whose nesting grounds come under the protection of the Anthony Islets Ecological Reserve.



The V. J. Krajina Ecological Reserve in the Queen Charlottes protects coastal forests, marine communities, sea bird nest sites, an estuary, a salmon spawning stream and the coastal bog pictured here.

where the existing ecosystems are threatened, a reserve fire will be fought.

Most of the research in B.C.'s Ecological Reserves has been on sea birds and flora. Very little has been done on big game. Ray Halladay, Chief of Wildlife Management, Fish and Wildlife Branch says, "Our use of Ecological Reserves has been very limited. But it will increase as more reserves are created specifically for animals. These reserves will be especially useful to us as benchmark areas."

With forestry so important to the economy of B.C., Bristol Foster feels reserves could be put to good research use by foresters. But there's a problem — any research that alters the environment has to be closely controlled. On the other hand, there is still much that can be done without disturbing the trees.

"Within five years, we hope to be using Ecological Reserves more," says Dr. Ted Baker, Research Division, Ministry of Forests. "Studies of successful natural tree stands can save a lot of trial and error research in reforestation. But we need ecosystems with a range of productivity for this kind of research. Many of the present Ecological Reserves are only marginal areas."

At MacMillan Bloedel, Grant Ainscough says, "Our research doesn't relate to old growth forests. We are dealing with shorter harvest rotations and plantations, for example. But research in Ecological Reserves may be valuable as a measure of the productivity of logging sites and in the selection of species to put back on them. As we get into more intensive management of our forests, reserves may one day help with mistakes that haven't even been identified yet."

Indeed, answering questions yet to be asked may prove to be the Reserves' most valuable function. For now, the existence of Ecological Reserves really needs no more justification than man's desire to retain undisturbed, for research purposes, some part of his natural environment. ◘

ForesTalk
Interviews

Ken Farquharson

By
Gord Price

Professionally, Ken Farquharson is an engineer. In his time he's worked on highways, bridges, transmission lines, ski resorts and dams (particularly the Mica Dam project on the Columbia). Now he concentrates on the field of resource use.

But he's best-known for his contribution to the environmental movement in this province. Though he is a founder of the Sierra Club in B.C., his name is more closely associated with the individual environmental issues that dominated the late 1960s and early 1970s: Cypress Bowl, Skagit, Nitinat. His contribution was as much to make people aware of the ways we value and allocate our land as it was to save the acreage itself.

Ken Farquharson is also a recreationalist. Since his childhood in East Africa where he was born 43 years ago, he has maintained a tremendous interest in things outdoors, particularly birdlife. In fact, what attracted him to B.C. were the mountains on the doorstep of Vancouver. He helped to found the Outdoor Recreation Council of B.C. to stimulate other recreationalists to think about land management and the need for protection of the recreation resource.

Foresters know him as a knowledgeable layman. He was one of the first to question possible overcommitments of resources in some regions; he is a member of the Forest Land Use Liaison Committee and is a commentator on forest management procedures and public involvement. In this interview he makes some sharp judgments on past resource decisions. He also feels that there has been considerable improvement in land use planning over the past decade, crediting the Ministry of Forests' new Forest Act with some "amazing advances" in this field. His thinking on the future of the forest industry, in relation to the future of the fisheries and recreation industries, challenges the view expressed by most foresters.

No single category will cover the scope of Farquharson's thinking. When you begin to analyze his ideas, you find that, as in the environment, one thing is connected to everything else.

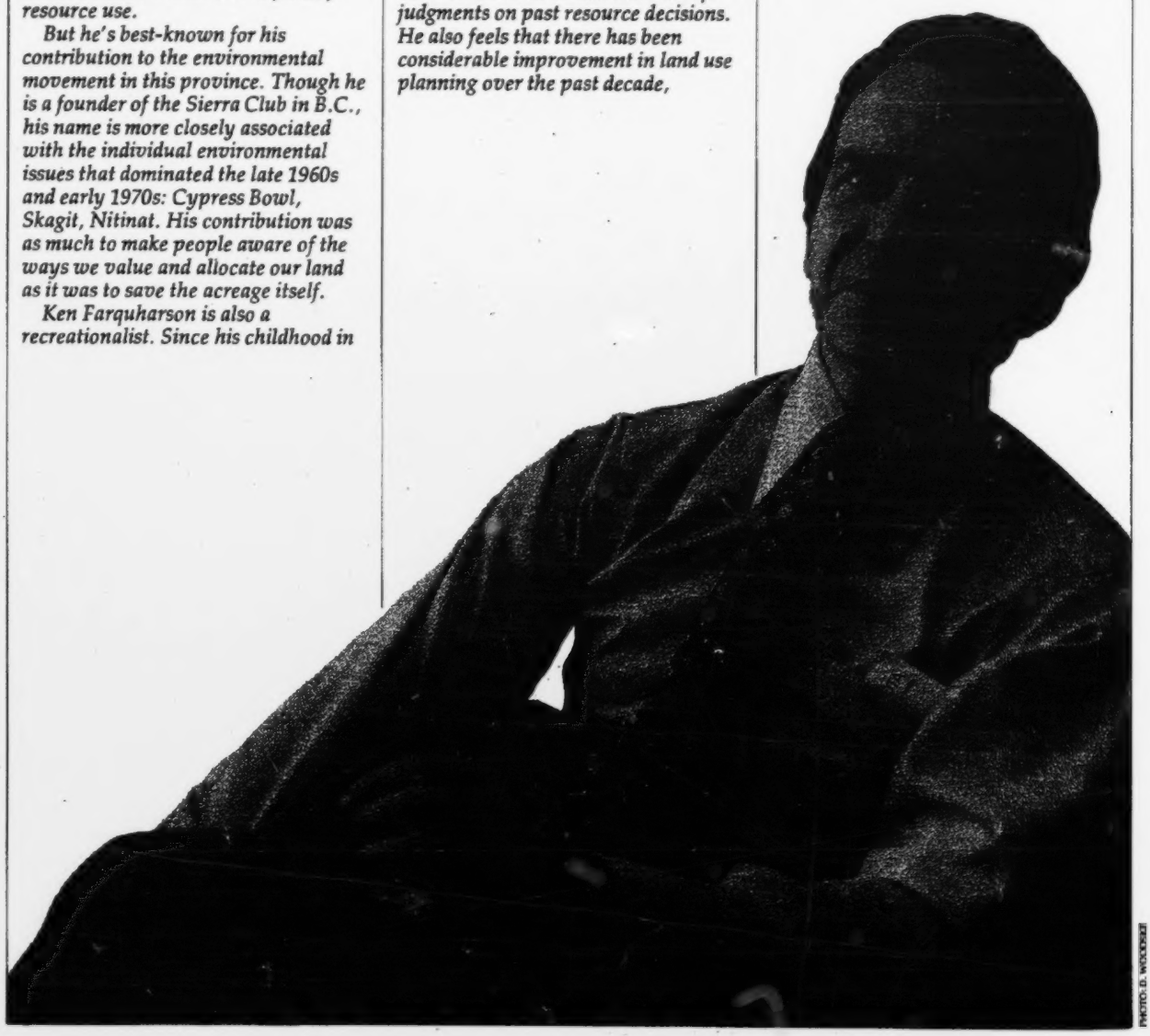


PHOTO: D. WOODWARD

FORESTALK: As an environmentalist, do you feel that humans should intervene in nature?

KEN FARQUHARSON: I accept that man's presence on this world is going to bring changes. Those changes are very often going to require engineering skills, and I feel

"Any community has a disastrous situation when its engineers are divorced from the natural world."

that to the greatest extent possible these engineering projects should be carried out in sympathy with the natural environment. Any community has a disastrous situation when its engineers are divorced from the natural world. In B.C. we are beginning to recognize the limitations which our climate, mountains and other things put on engineering activity, and we're much more prepared to design in sympathy with them.

FORESTALK: Can you describe how and why you became so involved in environmental issues?

KEN FARQUHARSON: My work as an engineer on the Mica project began to raise queries in my mind as to how we went about dealing with our major resource projects. I realized, for instance, that the province spent some $50 million on the design of the Mica Dam, but never spent a nickel on a review of the impacts of the project and of how neighbouring communities would be affected by the project.

I was thinking about these things but I hadn't raised my voice on the issue at all. I didn't until I got an understanding of how land use decisions were being made in British Columbia — from Cypress Bowl and the Skagit.

FORESTALK: How did the Cypress Bowl issue come about?

KEN FARQUHARSON: I accepted the basic decision to build a ski area on the North Shore mountains near Vancouver, in an area that was very dear to me personally as a weekend walking retreat. But I was absolutely stunned, along with others, at the manner of execution. The resource agencies we expected to monitor Cypress did not fulfil their functions; there was a lack of appreciation of the value of the recreation resource. That was what got me to think further about forest policy in this province.

The appeal of this province is the opportunity for extensive outdoor recreation. Yet nowhere in the whole resource management procedure could we see very much value being placed on recreation capability, except for the creation of some parks such as Garibaldi.

The controversy surrounding the flooding of the Skagit Valley near Hope was an example on which to raise the question: what is the worth of a recreational resource? The value the provincial government put on it in 1967 was clearly insufficient. Even the uninitiated could see that — and so we built and we built on that one point. That, in the long run, is what turned the Skagit situation around.

FORESTALK: Did you see the public mood change?

"People realized something had to be done in terms of more effective management."

KEN FARQUHARSON: The attitudes were there; the activists of the 1960s crystallized them. Pressures were growing on the people in the urban areas and in longer settled areas. The lower mainland population was building to the point where there were conflicts occurring between the forest industry and recreationalists, between forestry and fisheries. People realized something had to be done in terms of more effective management. This is where we were successful, in crystallizing that amorphous feeling. It was already there.

FORESTALK: What kind of changes have been made?

"We have a new Forest Act now, and while it is not perfect, it certainly contains some amazing advances."

KEN FARQUHARSON: We have a new Forest Act now, and while it is not perfect, it certainly contains some amazing advances. The requirement for annual review and reporting by the Ministry of Forests to the Legislature is, to my mind, absolutely critical. This is the first time that we have had such information made available to the public on a regular basis. Up until now the whole question of forest management has been left to the professional group, within either industry or government, and to the very few lay people who chose to get involved. Now the process is being widened, and many others are determined to gain access to the information because their livelihood is affected — the labour unions, the fisheries people, the wildlife people.

FORESTALK: What about the future of the environmental movement? It would seem fashionable to say that it has dissipated.

KEN FARQUHARSON: Oh no, I don't think so. You only have to look at the continuing education patterns of the kids and their interests. There is just a far greater awareness of what's happening. Environmental education is slowly doing its part. We have a broader though maybe less intense public than we had 10 years ago.

FORESTALK: And what of the future of resource management in the province?

"The reality is that unless you increase the intensity of your management, whether you're growing trees or wheat or moose, your productivity tends to decline."

KEN FARQUHARSON: The reality is that unless you increase the intensity of your management, whether you're growing trees or wheat or moose, your productivity tends to decline. We're at the point where, in many of our resource bases, we can only maintain the present level of economic activity we have by increasing productivity through silviculture, intensive forest management or salmonid enhancement. None of these things can be mounted without extra investment in the resource.

FORESTALK: You have startled more than a few people by saying that forestry has reached a peak in B.C. and that fisheries offers long-term jobs. But faced with the economic realities — international competition and the need for investment capital — you have to set

priorities and make trade-offs. Shouldn't forestry be on top?

"But look at the price of salmon. Are you telling me the fishermen of Prince Rupert aren't making money?"

KEN FARQUHARSON: I think that decision may have been true 50 years ago when we had a prime timber resource and there wasn't much value placed on our fisheries. Today the situation is reversed. We've taken out the prime timber, our forest productivity in such places as the north coast is not such as to give us those prime stands again, and in essence the timber is now a resource of lesser value. But look at the price of salmon. Are you telling me the fishermen of Prince Rupert aren't making money?

FORESTALK: If people aren't going to work in the forest industry, what are they going to be doing?

"We are going to have to put emphasis on retaining scenic qualities."

KEN FARQUHARSON: Alternate sources of employment will become bigger, whether it's fisheries on the coast or tourism in the interior. Consequently, you'll get further pressure for modification of the forest land base to accommodate the conflicting use. As emphasis switches, land allocation will also have to switch. I think the new Forest Act, by setting up timber supply areas, will give a much better concept to the public of the sustainability of the forest industry in a particular community. I believe we will begin to see a gearing down of the industry in some areas.

This is going to have to bring changes in land management patterns. We are going to have to put emphasis on retaining scenic qualities, retaining items of recreational interest and developing recreation in those areas to support a tourist experience.

FORESTALK: "Integrated management of resources" is a popular term these days. It is generally recognized as A Good Thing. But are there any problems with the concept?

KEN FARQUHARSON: We have to clarify the point between land management and land allocation. Land allocation is a political decision which reflects the pressures within our society, whether allocation is for hydro-electric projects or for aesthetic reasons, as in a park. Given the land allocations, it is then the responsibility of the land managers to deal with the impacts of these allocations and to try to make sure that the resource and environmental system is still keyed together and will function.

"Land allocation is a political decision which reflects the pressures within our society."

In the future, we are going to have a lot of argument over land allocation. Many of the present allocations were made in the 1880s to 1920s, when social values were very different.

PHOTO: D. WOODBEE

FORESTALK: Have you ever been called one of those rabid, irrational environmentalists?

KEN FARQUHARSON: Oh, yes, I was often described as that.

"Society is going to require changes to be made."

FORESTALK: With any justification?

KEN FARQUHARSON: I don't think so. The issues I argued, whether Cypress, Nitinat or the Skagit, were quite well founded — as shown by the fact that we've been successful in those issues.

FORESTALK: Finally, what is your opinion of the men who run the forest industry?

KEN FARQUHARSON: Most of the leaders are quite a ways ahead of their rank and file. They recognize that changes are taking place and that changes are necessary. They are very protective of their land base, but they recognize society is going to require changes to be made.

THE FOREST'S DEADLY ENEMY

The people who love the forest are the ones who harm it most. People like you, who wouldn't think of harming a stand of trees or destroying thousands of woodland creatures, who wouldn't dream of burning down another man's home or putting a firefighter's life on the line.

If you love the forest, you probably spend as much time there as you can. So do most of the 80,000 B.C. residents who earn their living, directly or indirectly, from the forests. For the most part we think about fire prevention as we go about our work and our recreation, but occasionally we get lazy or careless.

Then we become deadlier than lightning.

There are more than 2,500 forest fires in B.C. every year. The Ministry of Forests' Protection Branch calculates that lightning causes 37 per cent of them, industrial activity causes 25 per cent, and the people who use the woods for recreation cause 38 per cent. The Protection Branch contends that nine of every ten people-caused fires can be prevented by common sense, caution, and the knowledge of fire prevention's simple rules.

As you think of fire prevention, think beyond the trees. Think of lives, people, jobs, the price of things. The livelihood of thousands of people may ride on your common sense and good judgment. And think about the beauty that can suddenly be replaced by ashes.

If you use the forests, you have a responsibility to everyone else who will ever use them. A responsible attitude is the best fire-prevention tool you have.

As a group, ordinary citizens spot and report 35 per cent of all reported fires. Their concern and promptness saves thousands of hectares of forest, not to mention human lives and wildlife. This shows that the majority of people are concerned about protecting the forests from fire. Their attitude is right. Some, however, may still need a basic knowledge of how fire can be handled safely in the forest.

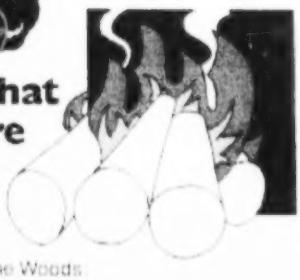
The information they need is found in the following guide. We invite you to look at it, then hang it on your wall. Make these laws and suggestions part of your life whenever you're in or near the forest.

Handle Fire Safely

Use Your Ashtray

Kill that Match

Douse that Campfire



If You **Must** Smoke In The Woods:

Use the ashtray in your vehicle.

If you're out in the forest, sit down while you smoke.

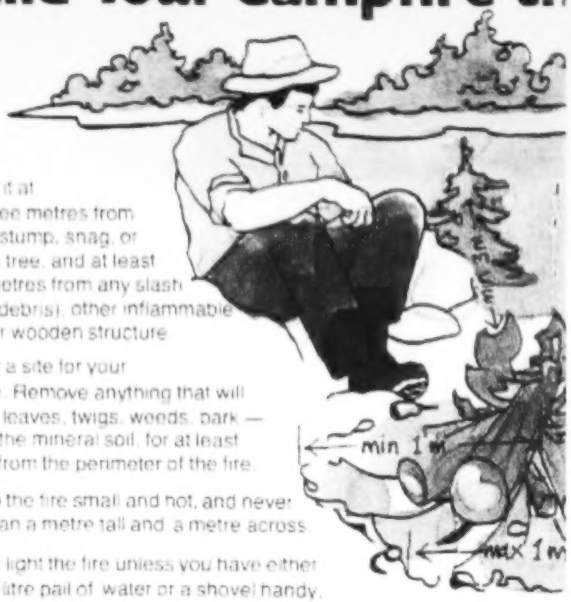
When you're finished, douse the butt in water or grind it out against a rock and put the butt in your pocket.

Remember that on a hot windy day a single spark from your cigarette can destroy a large area before the fire can be stopped.

**"Operator,
Give Me Zenith 5555"**

Memorize this number. Call the operator from any phone in British Columbia and ask for it whenever you see uncontrolled fire or even suspicious-looking smoke. Call immediately. More than a third of B.C.'s forest fires are reported by the public.

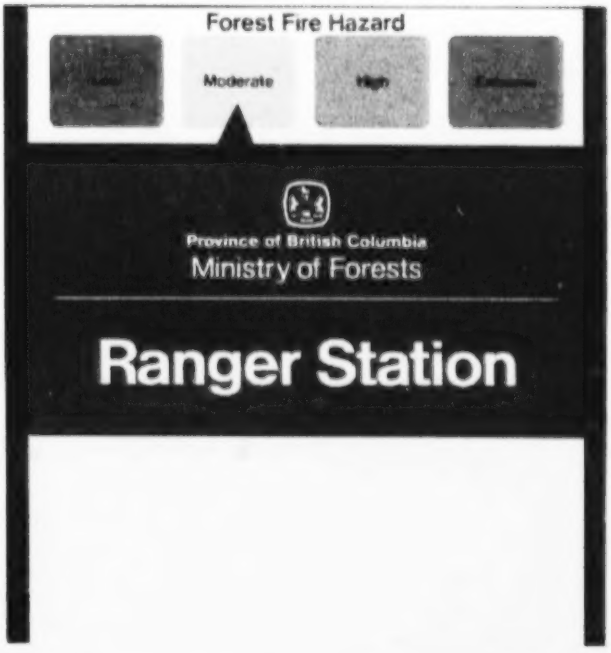
Build Your Campfire th



- Build it at least three metres from any log, stump, snag, or standing tree, and at least fifteen metres from any slash (logging debris), other inflammable debris, or wooden structure.
- Clear a site for your campfire. Remove anything that will burn — leaves, twigs, weeds, bark — down to the mineral soil, for at least a metre from the perimeter of the fire.
- Keep the fire small and hot, and never larger than a metre tall and a metre across.
- Don't light the fire unless you have either an eight-litre pail of water or a shovel handy, and remember, never light a fire if there's a strong wind blowing.
- Never leave your campfire unattended unless you are dead sure it's out. Sift the ashes with your fingers to make sure.

These are regulations, not suggestions.

What's the Fire Hazar



he Safe Way

Bury Your Briquets

If they're burning, or just hot, you can douse them with water. To be safe you should always bury them at least a foot deep in mineral soil — not in pine needles, leaf mould, or bark.

Treat Your Garbage With Respect

Put garbage in an approved container or burn it carefully. Left lying around it is a potential fire hazard and an eyesore. Don't leave it unburned in your campfire site. If you're in an area where there are no containers, bury your garbage at least a foot deep.

'd Today?

Ranger stations post this code. Here's what it means.

Low

Fires that start can be easily controlled. Take normal precautions.

Moderate

Fires can be controlled fairly easily. Take normal precautions. Take special care around wood that is drying out such as slash and fallen trees.

High

The forests are dry, fires break out easily and are difficult to control. A few sunny days can dry out the light brush and forest debris which can catch fire readily. Restrictions may be in effect; look for announcements on radio and television or in the newspaper, or ask the local Forest Officer.

Extreme

The forests are very dry. Fires break out very easily and spread so quickly that they may be difficult to control. It usually takes a change in the weather to put them out. There will almost certainly be restrictions on campfires and travel. Be sure you know what they are.

Are Restrictions in Effect?

It's your business to know what restrictions are in effect if you plan to be in the forest.

Campfires: The Ministry of Forests may impose restrictions any time the fire hazard calls for it. Signs may be posted. A Forest Officer may tell you not to set a fire or to extinguish one you've already set. Cooperate for your own safety and for the good of the forest. Don't forget the simple regulations for campfires shown here. If you aren't on land regulated by the Ministry of Forests the owner may post his own restrictions. You should obey them.

Other Fires: You may want to build a fire other than a campfire. Between April 15 and October 15 you need a permit to do so, and the Forest Officer issues it. He may deny it or revoke it if the fire hazard is too great.

Restricted Industrial Closure: This may not affect you directly. Industrial operations in forest areas are closed down during the most hazardous part of the day.

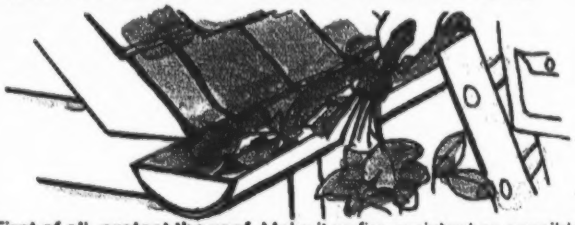
Complete Closure: When the risk is great enough all activity, industrial and recreational, is prohibited. But it happens only when the fire danger is most extreme.

Travel: Public roads are never restricted because of fires. But you may be prevented from traveling in a forest area by any means — car, truck, off-road vehicle, bicycles, or even your feet — if the hazard is too great. The restriction may apply to hiking, berry-picking, hunting, stream-fishing, or prospecting. Lake travel is permissible if the access to the lake is a public road. You can get a permit from the local Forest Officer when forest travel is essential.

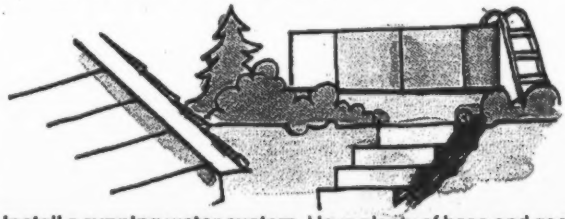
Fire and Your Summer Home

If you live in the forest or if you own a cottage, cabin, or mobile home in a rural area of B.C. there may be no organized fire protection for your home. The Ministry of Forests may not be able to help as it is organized to fight forest fires, not house fires. Its equipment is stationed to get into the forest quickly and to deprive fires of fuel so that they burn themselves out. This doesn't mean that the Ministry won't help with a house fire when it can, but its specialized equipment, methods, and training are not designed for this purpose.

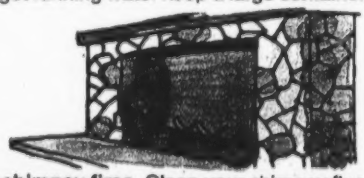
What YOU Can Do To Protect Your Summer Home



First of all, protect the roof. Make it as fire-resistant as possible. Every spring, clean up before fire season starts; get rid of leaves and needles from the roof and rain gutters.



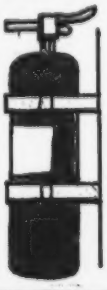
Install a running water system. Have plenty of hose and good nozzles on hand, and the more water pressure, the better. Until you can get running water keep a large container of water handy.

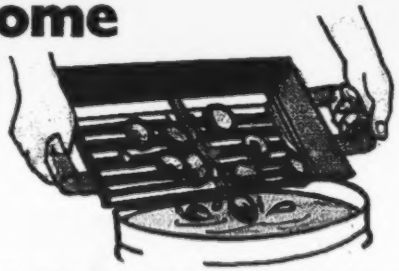


Prevent chimney fires. Clean your chimney flue every year. Keep the dampers in good repair and never leave home with a fire still going in the fireplace.

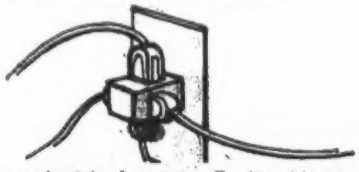
Clear a strip around your property. Make it three metres wide and clear it of trees, brush, and tall grass. The idea is to keep ground fires from creeping toward your house.

Be ready to fight. Besides running water and a hose you should have a good fire extinguisher on hand, well-maintained and easy to find. Buckets, shovels, and a ladder long enough to reach the roof are all helpful. Picture yourself in a fire emergency and run your family through a drill.



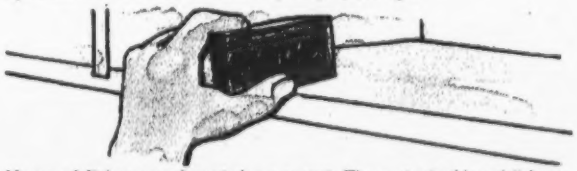


Keep your barbecue under control. Use it on open ground and keep an eye on it as long as the briquets are hot. If there's still some heat in the ash residue, dump it in water.



Check out your electrical system. Faulty wiring and unsafe heating or cooking equipment cause many a rural house to burn. Don't leave your electric blanket on. Give your refrigerator motor plenty of ventilation. Make sure that your radio or TV antenna is properly grounded. Unplug the TV set when you go away. Don't replace fuses with pennies, and don't overburden a wall socket.

Close the door to fire. Sparks, firebrands, and inflammable materials can find their way into attic vents and open crawl spaces. Screen off or board up any openings.



Keep children and matches apart. Fires started by children increase in number every year. Discourage them from playing with fire and hide the matches out of reach.

Know where to get help. Post emergency numbers by the phone. If you don't have a phone, keep them in your wallet or purse and find out where the nearest phone is.

Are You Planning To Build A Forest Home?

Talk to the local Forest Officer about fire hazards. He can advise you about fire danger and fire protection. He'll likely advise you to avoid steep slopes where fire spreads more quickly and natural draws where the terrain acts like a chimney. Then plan your home for safety. Pick the level part of the lot for your building site and select a fire-resistant material for the roof and walls. When the building is under construction don't let debris accumulate that could create a hazard.

Enjoy your forest home and protect your interest in it, in your family, in your forest, and in your province.

Province of British Columbia Ministry of Forests

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The Canadian Forestry Association of British Columbia

by Gord Price

Canada's first non-profit conservation organization, the Canadian Forestry Association (CFA), is as old as the century: it got started in Ottawa in 1900. Like Canada itself, the CFA has gradually become a federation of independent provincial associations. British Columbia, the last forested frontier, joined in 1925.

When the organization was first formed, man-caused forest fires were already enormously destructive, yet the notion that Canada's wealth of uncharted timber actually required conservation, as well as protection from fire, disease and insects, was considerably ahead of its time.

In British Columbia, the CFA has developed a regional emphasis. It operates five environmental centres, or wilderness camps, for use by schools on weekdays and by approximately 1,000 Junior Forest Wardens, scouts and other youth groups on weekends. These facilities are also used for special summer camp programs.

In response to the growing complexity of forest management and dramatic increase in the size and impact of industry, the CFA in B.C. started to develop what is now its most important role — the education of the public. From the distribution of various publications to production of the newspaper column "Ask About The Forest," (produced in co-operation with the Association of B.C. Professional Foresters), the CFA attempts to provide an accurate and neutral source of information on forestry.

Ironically, because of its neutral stance and a modest budget which leaves no room for expensive advertising, the association is unknown or at best vaguely familiar to most British Columbians.

The lack of awareness of the CFA by the public still surprises three-year CFA president Pit Desjardins, a vice-chairman of Weldwood of Canada. "If we didn't have an organization like the Canadian Forestry Association, there would be a real vacuum. There's a great need for a credible, reliable body serving the grass roots."

To get their message across more effectively with the financial and human resources available, Desjardins and his board are in the midst of developing five-year plans for educational programs and funding. The bulk of CFA's yearly budget comes from the forest industry. Government and the CFA's 1,800 members make up the rest, together with donations and funding for special programs.

One long-range program currently being introduced by the CFA may prove to be the most effective project it has ever undertaken. Broadly based, ambitious, and sophisticated, the program is named, appropriately, Project Learning Tree.

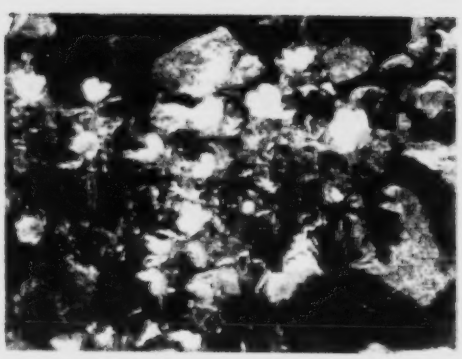
The manuals of Project Learning Tree (PLT) take forestry into every subject, from math to art, and into every grade, from kindergarten to grade 12. And they do it in an interesting and involving way — by making the students discover for themselves the nature of resources and the problems of management.

Another facet of PLT encourages meetings between resource people and students in their own regions. "The thrust of PLT is exposure," says CFA (B.C.) information officer Pat Butts. "We encourage industry to be perfectly frank when questioned. The idea is to get all sides presented, while the PLT presentation itself remains unbiased."

Membership in the Canadian Forestry Association is open to anyone, from corporations to kids. To join as an individual costs $25, and applications are available from the provincial office — 410-1200 West Pender Street, Vancouver, B.C. (V6E 2S9).

Cabanes stunted and wind blown, trees form the dominant feature of the rock vegetation alpine landscape.

(right) Trees take hold on the rocky terrain, providing shelter for the growth of other forms of vegetation.



(below) Under the cover of snow alpine vegetation awaits the spring thaw and a short but intense growing season.

(left) Come spring animals such as this marmot climb the rocky alpine slopes to graze the lush alpine meadows.

THE ROAD NORTH

by Charles Lillard

PART 2

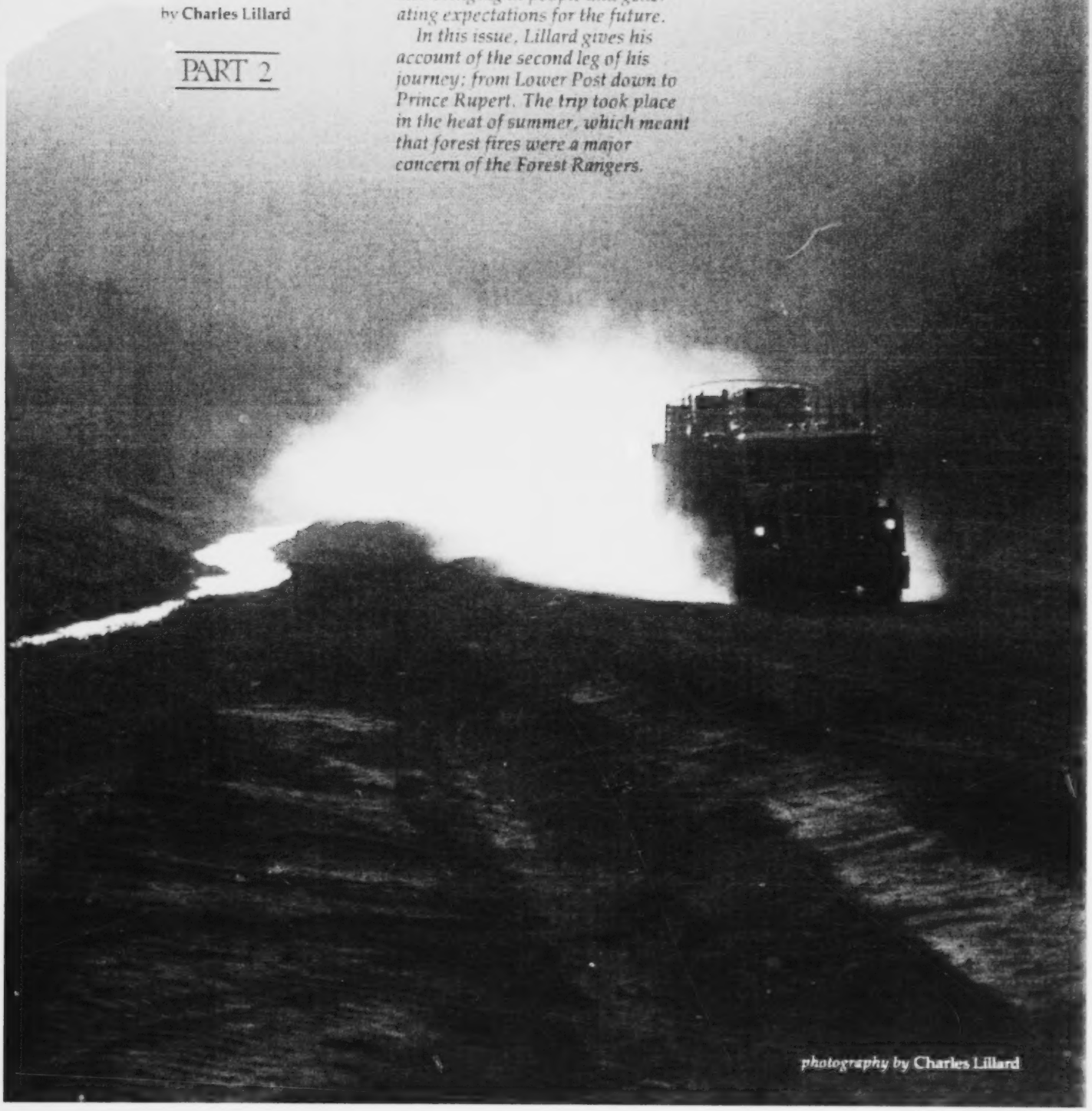
In the last issue of ForesTalk (Winter 1978), Charles Lillard reported on the drive north from Prince George to Lower Post on the Yukon border. Dotting the highway between wide open spaces were a number of towns bustling with activity. The forest industry is responsible for a good portion of this activity, but the development of other natural resources, notably natural gas, is also bringing in people and generating expectations for the future.

In this issue, Lillard gives his account of the second leg of his journey; from Lower Post down to Prince Rupert. The trip took place in the heat of summer, which meant that forest fires were a major concern of the Forest Rangers.

Overall, Lillard found northwestern B.C. to be less developed than the northeast. In many ways this is B.C.'s true frontier, often appearing untouched by the last two decades, or by the 20th century altogether.

So climb in, and share part two of the drive north.

Editor



photography by Charles Lillard

Once Lower Post was the Grand Central Station of the old north.

The village, originally Liard Post, is situated at the head of navigable water on the 1240 kilometre-long Liard River just south of the Yukon border. When fur and gold lured men (and not a few women) into this country, Lower Post was an important terminus. For those going north it was the jumping-off spot for the Mackenzie route into the deep north. For others it was the beginning of a trip up the Dease to Laketown on Dease Lake, where they might descend the Tanzilla to Telegraph Creek on the Stikine.

Years ago a visitor described the village as "sprawling along the Liard." Today it is a quiet place, vainly trying to ignore the rumble of traffic on the Alaska Highway.

Writers have made much of "the call of the north," surely part of this call were the rivers flowing into the unknown. Today's call is the highway, a ribbon of gravel leading north into the swelling hills.

The Alaska Highway, more accurately BC Highway 97, becomes Yukon Highway 1 a few kilometres outside Lower Post. Watson Lake in the Yukon Territory, 19 kilometres further on, is a busy place. It's far more hurried than most towns with a population of 1100; after Lower Post this bustle is unnerving. Obviously Watson Lake is an active part of the 20th century.

Highway 16 leading back into B.C. is four kilometres long. It's rough; the only rougher stretch is the next 21 kilometres on the British Columbia side. Between the Yukon border and the mining town of Cassiar there are two villages — Good Hope, a highway maintenance depot and Indian village, and McDame. Originally a gold mining centre, McDame, ignored by most maps, is now a centre for prospectors searching for jade, marble, and a wide variety of semiprecious stones.

Although there is some incredible scenery on the way to Cassiar, Boya Lake Provincial Park is the high spot on this leg of the journey. About 40 kilometres north of Cassiar, this campsite is maintained by the local Lions' Club. It is the epitome of what a campsite should be — clean, neat, and quiet. From the marsh grass, a duck quacks plaintively; further out a canoe emerges from a point, then dissolves. Again the north's call becomes that of the waterways. This is what brings people north, year after year.

The surrounding forest is boreal, chiefly spruce, lodgepole pine, balsam, and some aspen. So far there's been no sign of logging or sawmills — quite a difference from Watson Lake, where three mills cut eight million board feet yearly.

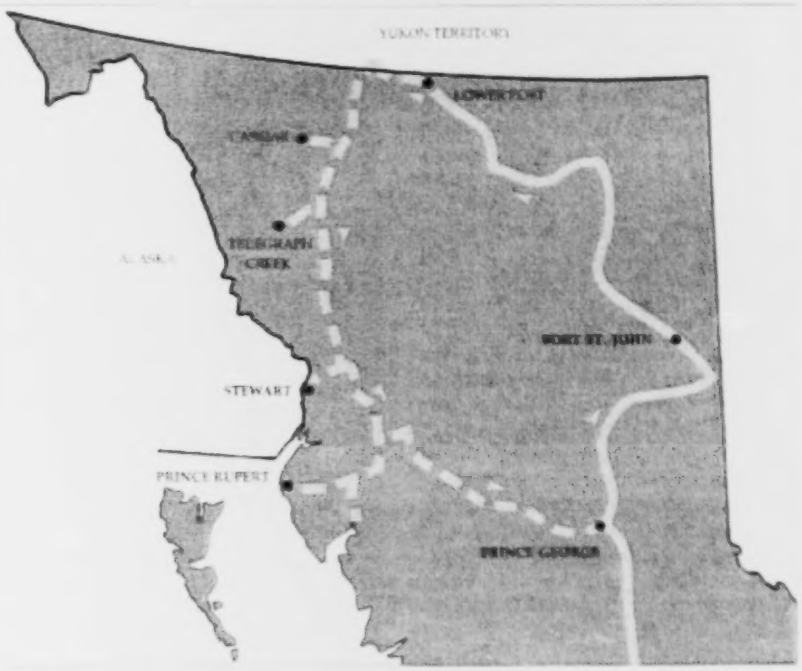
A guidebook states that "Cassiar is a frontier town." In response to this, one local points out that "nothing is further from the truth." He's right. Cassiar is a company town, and the company provides the 1500 residents with all normal municipal services. The "company" is Cassiar Asbestos Corporation Ltd.

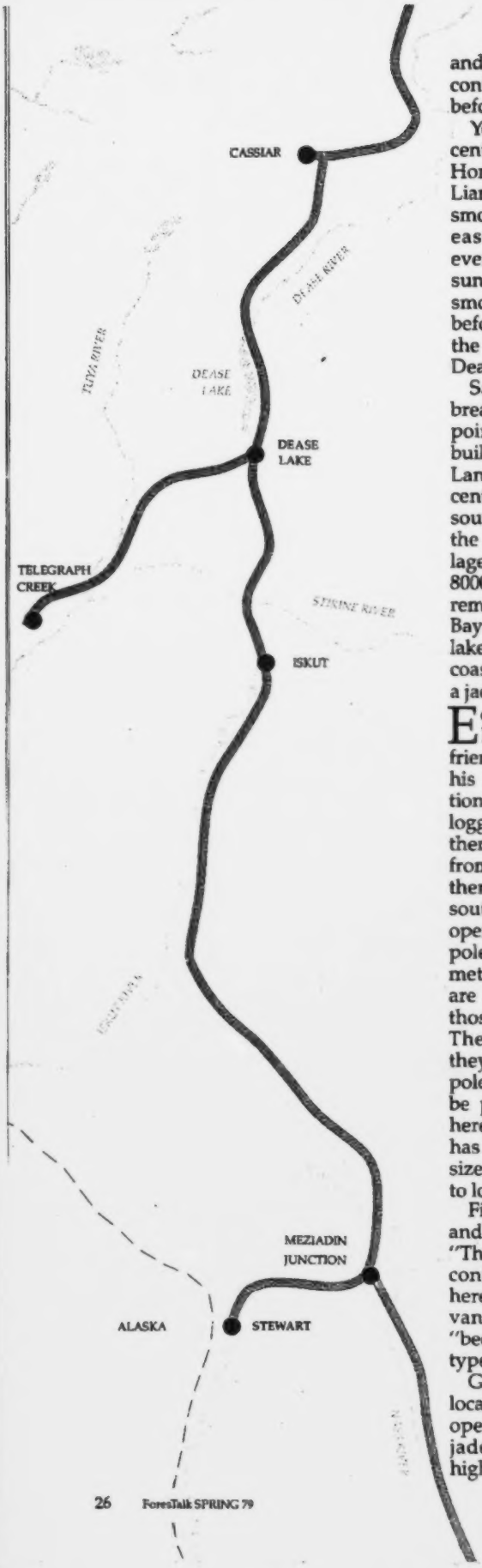
The real centre of town is McDame Mountain, where Victor Sittler and three partners located a large outcropping of asbestos in 1950. By 1952 a pilot mill was under construction; a year later this mill's capacity was 500 tons of ore daily. Now it handles about 4000 tons daily and produces a daily average of 380 tons of processed fibre.

Lakes and creeks beckon from the spruce and pine stands in the late dusk. Leaving the highway is impossible; the bed of the new road is six to eight feet above the old one. Tonight's camp is on the Cottonwood River, just north of its junction with the Dease. Night is welcome; the chill is invigorating after today's heat which bumped about in the upper 20s. The campsite appears to have once been the site of a homestead.

At times like this, one of the ironic features of the north emerges. Maybe there is a highway connecting towns to the north and south, but more settlers were in this country a century ago than today. While it's true the roads are opening up this land, it's fair to say that most of the people travelling these roads are tourists. Our grandfathers tried to tame this land

(opposite page) The late afternoon sun mingles with the dust stirred up by a truck as it hauls its load of asbestos out of Cassiar.





and failed. This generation is usually content just to come and take a look before returning home.

Yesterday much of the conversation centered on the fires burning in the Horseranch Range, a portion of the Liard Plateau; but the only sign of smoke was a blue haze in the southeast. Today the acrid smell is everywhere. At Joe Irwin Lake the sun disappears behind waves of gray smoke. Thirty-two kilometres pass before the wind lifts the smoke from the highway at the northern end of Dease Lake.

Sawmill Point is a good place for breakfast, as well as a fine vantage point. Across the lake a clump of buildings marks the site of Porter's Landing, until recently the economic centre of the Cassiar country. Further south on the lake there's a real relic of the gold rush days — Laketon, a village once boasting a population of 8000. Closer to Sawmill Point lie the remains of Dease Lake Post, a Hudson Bay Company post built in 1837. The lake wind is cold and damp, almost coastal. For the first time in two weeks a jacket is necessary.

Eckard Mendel is the Assistant Ranger at Dease Lake. A tall, friendly man, Mendel takes time from his busy schedule to answer questions. "There are several pretty good logging operations in the area. All of them are new and have relocated here from other areas." He goes on to say there is a new market for poles in the southern areas of the province. The operations here are supplying these poles, mainly to Terrace, 640 kilometres southward. "The people who are going to make it in this area are those who have variable operations." These mills will succeed because they're cutting lumber, house logs, poles, and ties. The operations must be portable, for the timbered areas here are patchy. Almost all of this area has suffered fires repeatedly, so the size of the timber varies from location to location.

Fires are a continual problem here, and this year is a little worse than last. "The fires are unique; most are not continuous fires. They burn spots here and there, and this is to the advantage of wildlife," says Eckard, "because you get a very patchwork type forest with a lot of open spaces."

Guiding and mining are the basis of local economy, and Cry Lake Jade is operating near Kutcho Creek. The jade is sold to Taiwan where it's highly prized.

Jade and asbestos go hand in hand. Near the Kutcho mines, several asbestos finds are being explored. The major one is on a nameless mountain near Wolverine Lake. Today's miners aren't the first to work in that area; gold prospectors pushed a road into Kutcho in the 1930s. And, if the truth were known, no doubt prospectors were working the area a century ago.

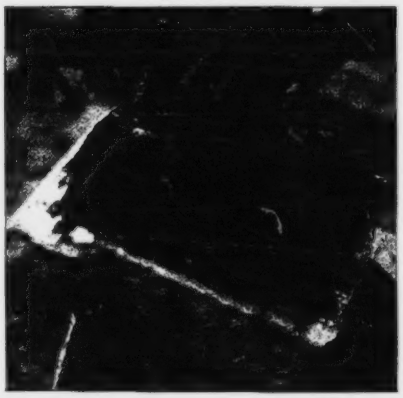
"Dease Lake," says Eckard, "is probably the major sheep-hunting region in North America." There are numerous hunting camps in the area. These keep nearly 250 men busy guiding, building cabins, hauling hay, food and gas, as well as wrangling. "Most of the hunters are from the United States and they're fulfilling a lifetime's dream."

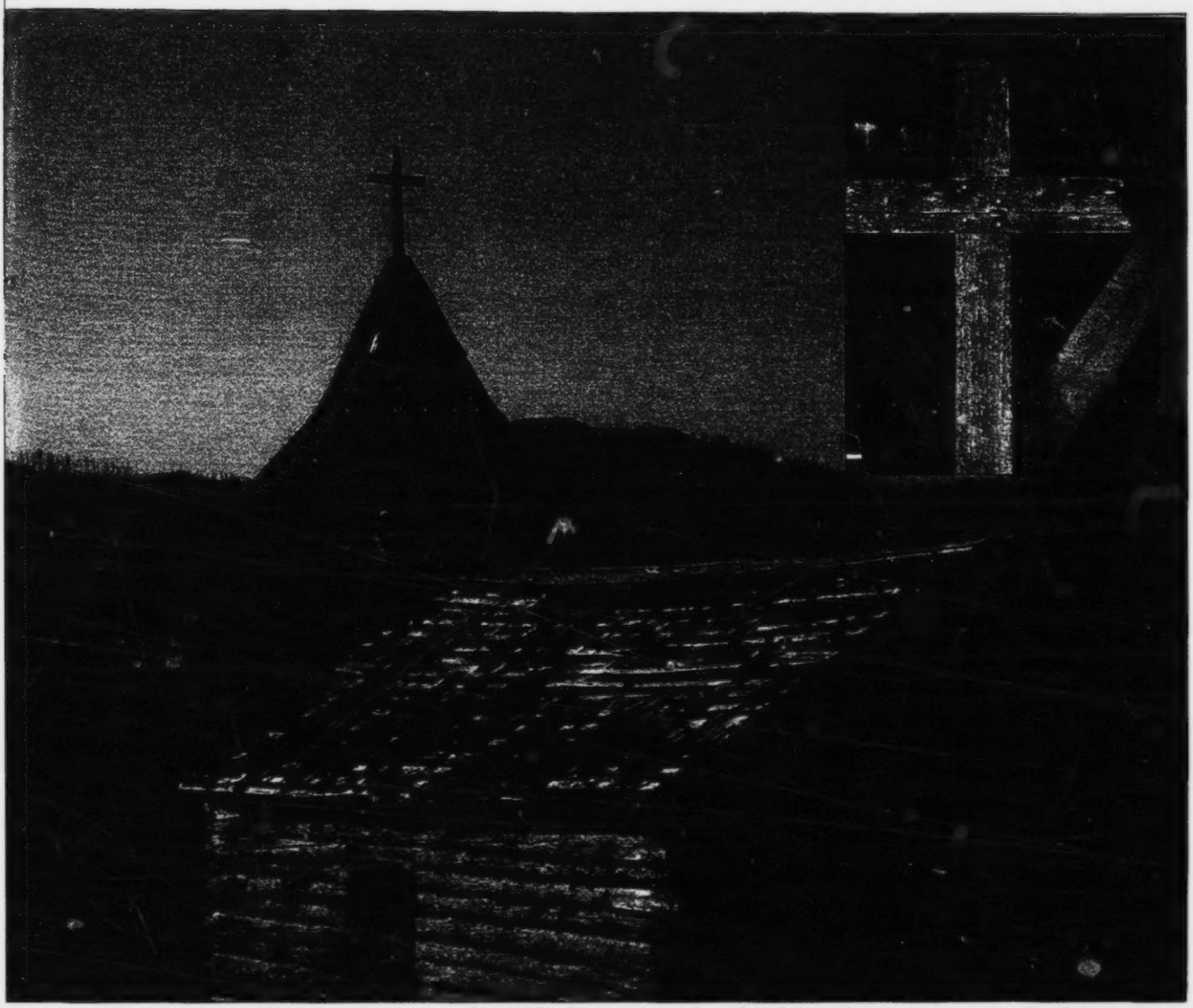
The road to Telegraph Creek was originally a pack trail slashed out in the early 1880s. Although the road tries to follow the path of least resistance, it's clear that the terrain fought against the original contractors. Consequently, some of the most hair-raising miles of driving in B.C. are to be experienced on this 188-kilometre haul. Three emergency cabins set up along the route speak loudly of winter road conditions.

At kilometre 57 the road flattens out completely. For the next 16 kilometres it runs through an old burn. This area is vital; even though the land appears parched, a feature heightened by the burn, it's alive with flowers.

At kilometre 92 the road crosses lava beds which have created a promontory some 18 metres wide. On either side the drop is 122 metres; on the right the Tahltan flows to the southeast and, on the left, the Stikine flows to the southwest through the Grand Canyon of the Stikine. The

Jade, which is sold to Taiwan where it is highly prized, is one of the mainstays of the economy at Dease Lake.





There is talk of restoring it, but except for this church, little remains of the once active Tahltan village a few kilometres up the Stikine from Telegraph Creek.

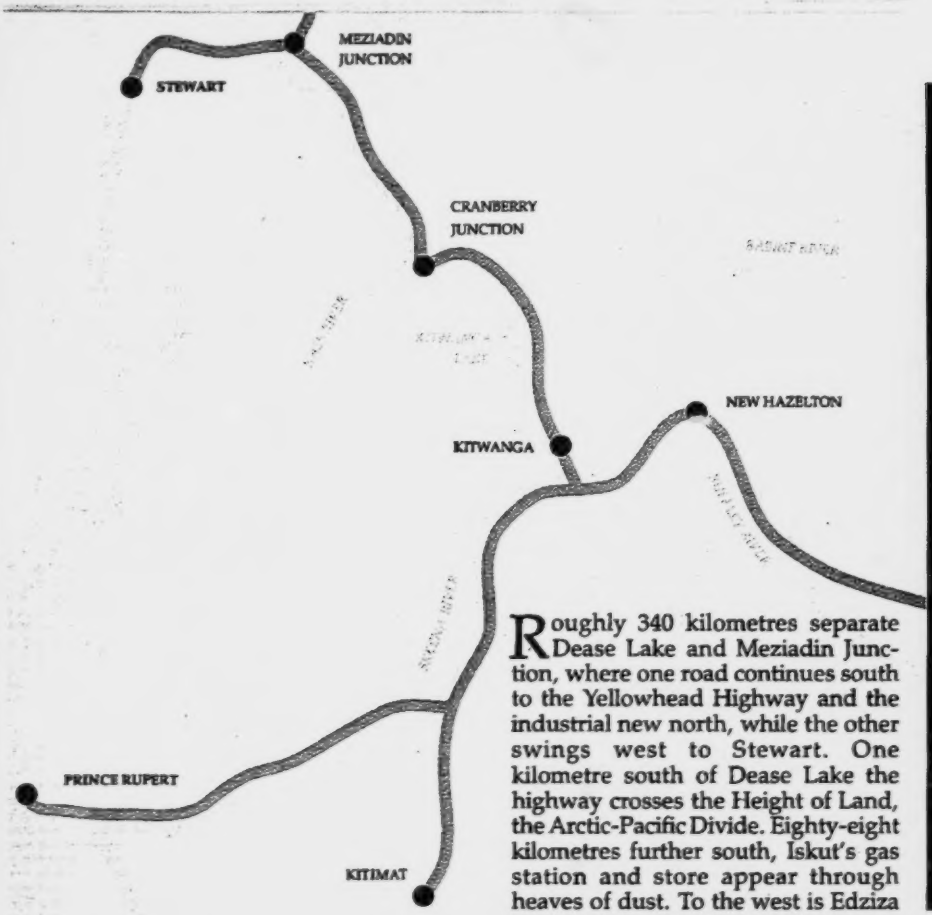
view is other-worldly.

Telegraph Creek clings to the north bank of the Stikine River. The population may be as high as 300. Save for hunting and guiding, there seems to be little of a local economic base. Now that the river boats, like the Margaret Rose, a paddle-wheeler, no longer run up from Wrangell, the village is hardly more than a historical footnote.

The main topics of conversation are the fires burning on the lower Stikine and the major effort mounted by the Ministry of Forests to contain them. Scott Meadows, the R.C.M.P. constable, and Francis Gleason, a man of about 50 who seems to be related to almost everyone who was part of this region's history — the Hylands, Callbreaths and Campbells — have spent most of the week chasing firebugs. Scott's about as tired as a man can be. Later, Francis suggests a run in his boat saying, "I need some fresh air." Francis talks to the river and to his boat; when there's a lull he points out landmarks: one of the Hylands' ranches, Mess Creek and then, up creek, a bridge where a piece of wire dangles over the canyon. Locally, the wire is virtually the only reminder of the Yukon Telegraph System.

Even though a road connects the village with Dease Lake, Telegraph Creek is today more remote than in any time in its long history. At one time the telegraph system connected it with the rest of the world, but today there's not even a land line phone here. (Several government offices have radio phones.) During the summer months river boats came up river from Alaska. Glenora was a Hudson Bay Company post 22 kilometres westward, while up river a few kilometres Tahltan was a neighbouring village. Now, except for a few remains, both are gone. The trails connecting Telegraph Creek with the "outside" have also virtually disappeared. One leads south to Hazelton, another east to Hyland Post, Caribou Hide, and Ware, which, in turn, connects to Lower Post and Fort McLeod. A third trail leads north to Atlin.

Today, Atlin, situated on the eastern shore of Atlin Lake, has no direct contact with Telegraph Creek. While the villages are similar in size, Atlin is by far the more remote for most of us.



Telegraph Creek, once an important communications link for the north, today sits quietly along the steep banks of the Stikine River.

It can only be reached via the Yukon. The town was founded in 1898 when gold was discovered on Pine Creek. Between that date and 1962, $12 million worth of gold was recovered in the area.

Today, some pioneering logging is going on locally, as well as the usual mineral exploration. No one knows what is taking place in the area separating Atlin and Telegraph Creek, a far cry from the day when a mail route connected the villages. Few are even aware that a 2000-hectare fire is raging in the Sloko River Valley. The combined efforts of 60 firefighters, helicopters and air tankers have, so far, managed to keep it out of the Atlin Provincial Park where no appreciable rain has fallen since April.

Roughly 340 kilometres separate Dease Lake and Meziadin Junction, where one road continues south to the Yellowhead Highway and the industrial new north, while the other swings west to Stewart. One kilometre south of Dease Lake the highway crosses the Height of Land, the Arctic-Pacific Divide. Eighty-eight kilometres further south, Iskut's gas station and store appear through heaves of dust. To the west is Edziza Peak. Edziza may be a peak, mount, or mountain, and its height may either be 2787 or 9143 feet — depending on what government map is being used. Another of Edziza's claims to fame is that geologists believe it to be one of the hottest peaks in North America. The ridge running up to it is also potentially active.

To the east is the grand beauty of Spatsizi Plateau Wilderness Park; the Skeena Mountains lie to the southwest. Probably prospectors are in there looking for jade and asbestos, and recreationists are likely making their way through the mountains and along the rivers.

The forest is still boreal but the trees are smaller now, the ground more arid. A few kilometres south of Iskut the road enters the Iskut Burn, 31,200 hectares burned over in 1958. Although some reclamation work has been done here, there's little evidence of this from the highway. It's a no-man's-land.

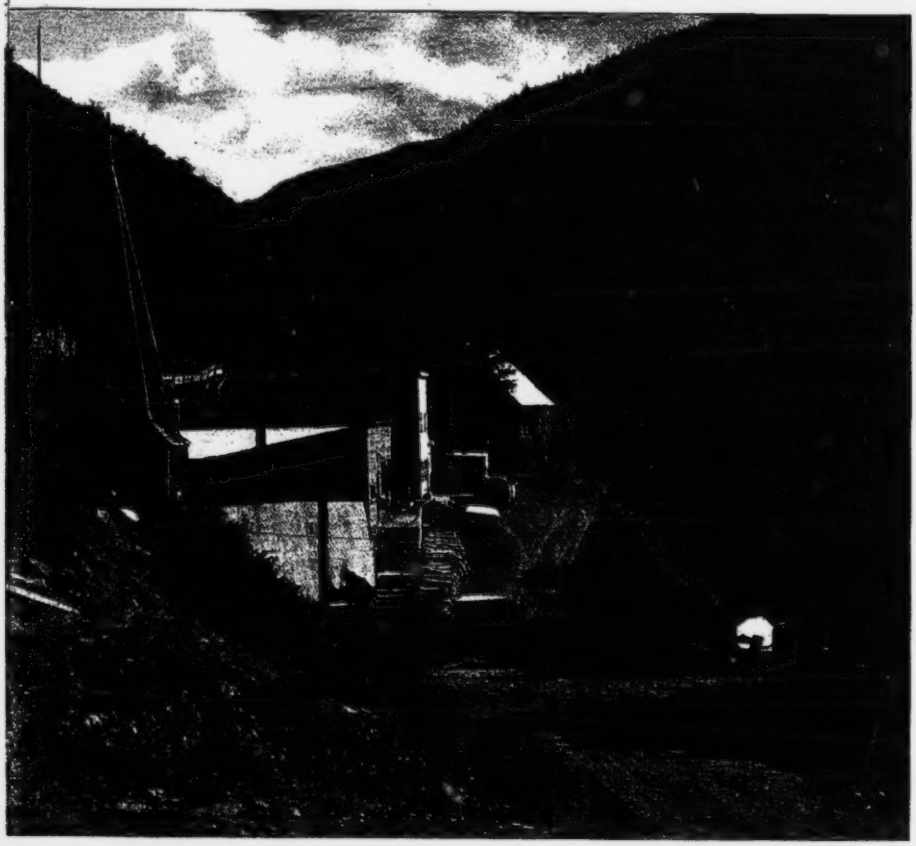
Meziadin Junction is a truck stop in the middle of what might have once been a gravel pit. Although it's only 62 kilometres into Stewart, the drive takes hours. One might spend days at Bear Glacier, where the calving ice sends shocks of water across the highway.

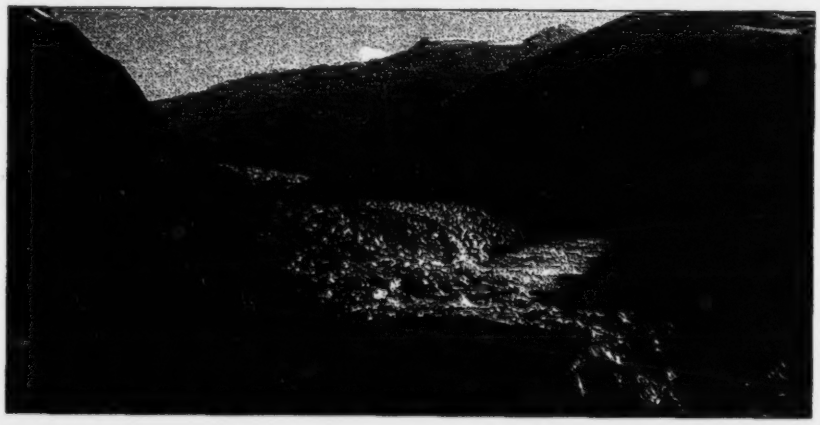
When this trip was taken in August of 1978 Stewart was struggling. Bill Brinnen, the local Forest Ranger, put it bluntly: "Everything is in limbo." His wife added that the local housewives were afraid to wash their curtains. "If we take them down, the city will think we're moving. Next thing we'll know there'll be a crew here boarding up our house." A joke, maybe, but a quick count suggested a fifth of the town was boarded up.

The town's income has been dependent on mining. The Premier Company closed down in 1957 and it

The Right Dam But The Wrong Name

"The Road North — Part One" in *ForesTalk* Winter 1978 erroneously referred to the B.C. Hydro dam project on the Peace River near Hudson Hope as Site C. The official name of that dam is Peace Canyon, and it was formerly known as Site One. Site C is a location some 50 miles further downstream near the Moberly River where B.C. Hydro is studying a possible hydro-electric project, but B.C. Hydro emphasizes that no decision has yet been made to proceed with the development of Site C.





The calving ice of Bear Glacier can send shocks of water across the highway leading from Meziadin Junction to Stewart.

seemed that Granduc copper mine was closing its shafts for good. But in February of this year the government announced that the mine will re-open and the future for Stewart today looks brighter.

Some people suggest Stewart may also become a deep-sea port if one of the oil lines from the north is routed here. Others look forward to the town becoming a tourist mecca.

The restaurant at Meziadin Junction is full of noisy hunters from Vancouver Island. Southward, Meziadin Lake is passed in the night, as is the Nass River at Cranberry Junction, and Kitwanga Lake. The village of Kitwancool at the foot of Kitwanga Lake is a glimmer through the trees and, once it is passed, the door to the old north closes.

Kitwancool may be seen as the apex of a triangle. A line drawn from this village to the eastern corner of B.C. passes through Fort Nelson. A second line drawn to the western corner, near Mt. Armour, narrowly misses Stewart. The B.C.-Yukon border is the base of this triangle. This base is some 3400 kilometres in length, the sides roughly 2400 kilometres long. Inside this vast area there is only one industrial town, Cassiar. This region is the old north: unindustrial and uninhabited, its potential yet to be assessed. This country has a past; it's awaiting a future.

Another rough triangle is formed by using New Hazelton, a few kilometres southeast of Kitwancool, as the apex. One leg of this open cone runs west to Prince Rupert, the other southeast to Prince George. This is the new north, with growing industrial towns lining the Skeena River to the west and the Bulkley River to the southeast, then extending along the lake chain to Prince George.

Prince Rupert, "The Gateway to Alaska" and the "Halibut Capital of the World," thrives, naturally enough, on fishing. It has the world's third largest natural harbour which is ice-free the year round. There is a lot of activity in the city, as well as in nearby Port Edward, where Canadian Cellulose Ltd. operates a $40 million pulp mill and an $80 million kraft mill.

Driving from Prince Rupert to Prince George on the Yellowhead Highway (Highway 16) is, in comparison to the great northern spaces, an almost uninterrupted journey through a seeming blur of mill towns. Terrace, Hazelton, Smithers, Houston, Burns Lake, Vanderhoof; West Frazer, Degroot Logging, Northwood, Houston Forest Products, Babine Forest Products, Takla Forest Products, Netherlands Overseas — some of the many communities and companies which together forge a chain of logging activity cutting across the centre of the province. Even jaunts off the highway — Kispiox on the Skeena, Southbank on Francois Lake, Toply Landing on Babine Lake, and Fort St. James on Stuart Lake — merely reinforce the fact that timber is the area's top industry.

Tourism is growing dramatically, and is definitely another major industry for these communities. But if the traveller is listening for the call of the north, he will find himself too far south. The north's appeal — the echoes of the past and schemes for the future — can only be experienced, no matter how imperfectly, by turning left at Prince George and taking the road north.

People

Andy Dick

by **Grant Ellis**

He learned the art 60 years ago at his grandfather's knee. Today he is spoken of among his people as a builder of the 'tee-ah-wiss' – the graceful cedar canoe of the Coast Salish Indians.

PHOTO: GRANT ELLIS

In the dim past, massive red cedar canoes carried the men of B.C. coastal Indian tribes on expeditions of war and exploration. Today's dugout canoes, light and slender, are made for speed. From Nanaimo to Lummi Island, from Cultus Lake to Esquimalt, the Coast Salish people race every weekend from May to August. And they know the canoes of Andy Dick.

Last year, a warm summer afternoon found Andy at his Kulleet Bay shop on Vancouver Island, scrutinizing the lines of the *Little Maria*. He worked the inside curves with a drawknife, checking constantly for thickness. The following week, south of Ladysmith, six men of the Chemainus band would touch the *Little Maria* to the waters of the Shell Beach Reserve. They would put her through a seven-mile course against teams of trained pullers from other Coast Salish tribes. That would be the *Little Maria's* first time in the water.

Little Maria's lines belie her origins. She began as a thirty-ton red cedar in a Shawnigan Lake forest, with Andy Dick squinting critically up at her. "Second growth is no good," he says. "You need first growth cedar." The tree is five feet through at the base. He walks around it, touching the bark, glancing at the sky, the sun, the nearby trees.

"The mistake a lot of them make is to walk up to a tree that has a clear side. They look at the clear side and say, 'that's the bottom of my canoe.' But the south side of a tree can be much lighter than the north side. If you split it from north to south, you can wind up with a canoe that leans in the water."

He steps back again and looks up, leaning left and right. "You want one without too much taper. That way you can get two canoes from the same tree."

He beckons to the young men with him. They fell the trees with chain saws. The canoe-maker marks off a forty-foot length and cuts the log there. The men cut it lengthwise along its east-west axis. Before the halves of the log leave the forest, Andy Dick has made the rough cuts which already have the unmistakable shape of a Coast Salish dugout canoe. One of them will become the *Little Maria*.

The young men of the Chemainus Band heave the rough-cut cedar onto the racks of their trucks for the drive up island past Ladysmith, then east to the quiet beauty of Kulleet Bay.

For the last 15 of his 65 years, Andy

PHOTO: GRANT ELLIS

Dick has made cedar racing canoes. He works outdoors, beside his home, in the shade of tall maples. Kulleet Bay is just a few feet away. Behind Andy, its maroon and white finish kept from the sun by a post and shake shed, is the 46-foot *Maria*, a big sister to the *Little Maria*. "If you keep the canoes out of the sun, they stay happy and don't crack." On the other side of Andy's work area, toward the bay, several rough-cut cedar forms await his attention. They are colourfully adorned with bedspreads, blankets and comforters — their protection from cracking under the summer sun's dry heat. "If they do crack, we go to the woods and find an old windfall. They leave a lot of pitch in the butt. We seal the cracks with pitch, and that's the last time they crack.

"We cured the *Maria* with dogfish-liver oil. It's like using linseed oil. They never crack. They do stink for a few days, but then the smell goes away for good."

Andy was introduced to his craft at an early age. Canoe-racing was in full swing on Vancouver Island at the turn of the century, and was popular enough in the 1920s to create a demand for the canoe-builder's art. Andy's grandfather was among those building racing canoes according to centuries-old techniques.

"I stayed with him when he lived at Porlier Pass on Valdes Island. We called it Cowichan Gap. We'd go all the way to Qualicum Beach in his sailboat — sometimes we'd have to *row* all the way — just to get some special rocks. You could heat those rocks in the fire and they'd never crack, no matter how hot they got. He used them to burn out the inside of the canoe. The heat would sear the wood, and seal it. It was slow, but it worked. He was still doing it that way when I was 14 years old.

"He never used the same rocks twice. He'd go and get some more, even though it was a 50-mile trip one way. I was too small to row then. I'd grab my paddle and paddle along with him."

Red cedar is still the material of choice for dugout canoes. Light, rot-resistant, and easy to work, it can be restored from a water logged state in short order. Paddles are short, with a narrow diamond-shaped blade, and are of yellow cedar (cypress). These things have not changed in generations. But Andy has an advantage over his grandfather, who got by with heated rocks, a double-bit steel axe, and great patience.

"My wife and daughters go berry picking every year in Washington State. One year they took the money they earned to Nanaimo and bought me an electric planer and a long extension cord. Was I glad to see it!" But chain saws and electric planers cannot replace the painstaking hand-finish Andy gives his canoes. He still hacks out the canoe with an adze and rounds the curves with a drawknife. He drills holes the length of the boat, then checks continuously with an improvised thickness gauge as he works. Braces are mortised into the top edges. Kickboards beneath the seat give the pullers a means of bracing themselves. Andy takes pains with all these things, because of the difference a well-finished canoe can make to its team. His pride in his work makes deadlines of secondary importance.

"I get up at six and start working. I usually quit by four, but I'm getting more like a white man, I guess. If I had shade all day, I could work right through." Andy finishes each canoe with the traditional Indian racing prow, then paints and varnishes it with care. His deepest feelings are involved.

"In my time, when you were pulling a canoe, you believed in it. A canoe is like a person. You talk to it by name. You tell it where you want it to go." He pats the *Little Maria* affectionately. "A canoe has a certain time to win. The *Cowichan Queen* is winning right now. Then it'll be some other canoe's turn."

Andy's canoes race all summer long with pullers from other bands. Including the well-known *Geronimo*, his first, Andy has at least a dozen racing; probably more than any one builder. His canoes have run with the Cowichan, the Saanich, the Penalukat, the Malahat. From Kuper Island to Esquimalt, from Siebert Island to Kitsilano, Andy Dick's canoes are famous among his contemporaries.

There is an ironic twist to his life: Nanaimo-born Andy Dick spent almost 35 years in a Seattle navy yard building giant vessels of armored steel — twentieth-century war canoes. Now he, his wife, their eight children and their grandchildren enjoy the quiet sweep of Kulleet Bay, and Andy Dick points with pleasure at a tiny eight-foot canoe cut and shaped from red cedar. "For my grandson," he grins. He is happy with his work, pleased that canoe-racing has risen again in popularity among his people.

"The old-time canoe makers are dying out. But canoe-making is having a comeback. A couple of the other bands weren't paying much attention to the kind of canoe they had. Then they started losing races to better canoes." He grins.

"Now they're all building them."

The following Saturday, the six-man *Little Maria* made the trip across the peninsula to Shell Beach. Cutting the water to the chant of her pullers, she raced from the cove to the waters of Stuart Channel, then came home along the beach. She was second, behind *Quamichan* of the Cowichan Band. But the next day turned out to be *Little Maria's* turn to win: her six-man crew paddled away with the winners' trophy.

She will be back racing again this year, and everyone expects this sleek-running canoe, crafted by master builder Andy Dick, to be a winner for years to come.

Letters to the Editor

I read the editorial comment at the beginning of the Winter 1978 article "The Road North" with some dismay. This and the article following did little to inform the people of B.C. about the north, but simply perpetuated the cliché of a huge area spilling over with riches. For instance, the area may contain 67 per cent of B.C.'s forest acreage, but it is mainly an area of small timber and the regrowth period is appallingly long compared to the coast.

However the area where the north stands to suffer the most at the hands of an uninformed public is hydro-electric power. Dams flood the valleys where the best of the timber is. That is also where almost all of the economically viable farmland is. The north is big, but in terms of area suitable for agriculture, intensive forestry practices, even wildlife habitat, it is quite small. Dams, the ultimate single use concept, will quickly destroy this small area, leaving nothing but uneconomic timber and the fossil fuel resources.

Rational resource development in the north depends on an informed populace south of 100 Mile House. Your usually excellent magazine can help to that end.

Mr. Allan Lamb
Prince George, B.C.

Charles Lillard's interesting article "The Road North" in your Winter 1978 issue contains an error, no doubt inadvertent, which may confuse some of your readers.

The hydro-electric project under construction on the Peace River near Hudson Hope is not Site C, as the article several times refers to it, but Peace Canyon. The confusion may have resulted from the fact that Peace Canyon formerly was known as Site One.

Site C is the location on the Peace River some 50 miles farther downstream near the Moberly River where B.C. Hydro is studying a possible future hydro-electric development.

Most readers familiar with the area will spot the error, but I would like to emphasize that Hydro, far from having started construction at Site C, has not yet even decided whether to seek regulatory approval to build a power project there.

J.A. MacCarthy
Manager
Public & Customer Relations
B.C. Hydro and
Power Authority

In "The Road North" in your Winter 1978 issue you mis-labelled the Site One dam, presently under construction on the Peace River, as being the yet-to-be-built Site C dam. This dam is four miles from the city of Fort St. John and if it is built, will back up waters to the Site One dam. B.C. Hydro and the provincial government claim the Site C dam is still just one of fifteen options being considered for future energy projects.

Our organization, The Save The Valley Committee, as well as several others, including the Peace Valley Environmental Association, have been actively opposing Hydro's plans to dam any further on the Peace River. We believe that the energy needs of the two million people in this province shouldn't require the incredible destruction of so many of its rivers and valleys. The battle for the Peace has just begun.

Patrick Maxcy
Chairman
The Save The Valley Committee
Fort St. John, B.C.

To any member of the Prince George Forest Region's protection staff and certainly to the Ranger staff in Mackenzie, "Invisible Ingenika" ("The Road North" ForesTalk Winter 1978) is quite "visible!" As a secondary air tanker base, fire tool cache and support station, Ingenika can quickly become a beehive of activity during hot summer months. It serves as a base of operations for forest fire fighting on the north end of Williston Lake and its tributary drainages. The residents of the community are a readily available and often used suppression crew. If Ingenika has disappeared since last summer, it is only under a blanket of snow, and no doubt will reappear again in the spring.

Russ Bell
Assistant Ranger
Ministry of Forests, Mackenzie

I wish to congratulate ForesTalk for the article on knapweed — "Balkan Invader," Fall 1978. The subject was well researched and photographed, giving your readers an accurate account of British Columbia's worst rangeland weed. I would hope that all range users, be they cattlemen or recreationists will heed the warning and do their part in protecting our valuable grassland resource.

R.S. Cranston, P.Ag.
Chairman
Knapweed Action Committee

Although ForesTalk has been and still continues to be an excellent publication on forestry and related practices in British Columbia, the article "Balkan Invader" in ForesTalk Fall 1978 contained a photograph that, to us who use pesticides and must enforce safe practices in the application of the same, was highly disturbing.

The photo depicts a young man, dressed only in gym shoes, denim pants and with bare hands and arms spraying herbicide on a clump of knapweed. Herbicides of any type require safe handling and proper dress while applying to prevent injury to the applicator. Our standards are that the applicator must wear protective clothing, especially to cover the feet, legs and hands. Where drift is expected, a face mask must also be worn.

The disturbing feature of this photo is that individuals may not take to heart seriously the aspects of chemical safety that necessity dictates. We hope you will consider this as constructive criticism and we look forward to future issues but with proper safety practices depicted.

C.M. Kooistra
Administrative Forester
Ministry of Forests
Surrey Nursery

I have just read the Fall 1978 ForesTalk article about the invasion of knapweed in the interior. About 20 years ago Jean and Nan Bostock were aware of the serious threat posed by this weed. They went so often to the government office in Kamloops to see if something could be done that they were first thought of as a nuisance. They really were frustrated that no one cared. About 10 years ago Nan Bostock left $50,000 for research of this weed to the University of British Columbia.

Jane Montray
Williams Lake, B.C.

The Bostock name has long been associated with knapweed research. Years ago the family ranch at Pritchard was infested with the weed and the Bostocks lobbied long and hard for something to be done about this invader.

Ultimately, a $15,000 grant was given to the University of British Columbia in memory of Brigadier Bostock by his surviving sisters to further range weed research. Later, on the death of Nan Bostock, an additional amount was added to the grant, but it never reached the $50,000 figure.

Some very useful data has been compiled

on knapweed using the Bostock grant monies, and it unquestionably has given a good base and impetus to research work now supported substantially by other government programs. Knapweed research owes a lot to the persistence of the Bostocks.
Editor

Congratulations on an informative article on knapweed in your Fall 1978 issue. The Okanagan is not entirely lost to knapweed. The Lumby Range & Livestock Association together with government agencies has conducted a vigorous chemical holding action for over ten years in the Lumby area with good results. The North Okanagan Regional District is now doing good work in this regard.

As well as a chemical front and a biological front there is a third front open to us to be used against knapweed — the use of specific grasses, legumes or any other plant which provides good feed for cattle and wildlife and which also resists the spread of knapweed. This is an area which I believe could be investigated more thoroughly.

Jacob A. Funk
Lumby, B.C.

I have had experience with another plant similar to knapweed (ForesTalk Fall 1978) in its predation — gumweed. It has been here (near Prince George) about six years, being thickest under the Hydro lines. By hand pulling a definite reduction of numbers is noticeable after three years; hoeing and ploughing have less effect. The seed is a hairy oval which is carried by the foot hairs and muzzles of horses and cows, but they don't eat the plant. The gumweed has spread east and west of the power lines, suggesting that the seeds are brought to the roads overnight by wandering animals and then picked up by vehicles in the morning heading for town. It took only two or three years for gumweed to spread to all open areas of my quarter section, and its spread reduces the food available for my farm animals.

David Carpenter
Pine View, B.C.

Gumweed is an opportunistic invader. Soil disturbed following the clearing of land becomes vulnerable to the weed. Once in place gumweed resists the re-establishment of native vegetation and useful forage plants. Cultivation in the right manner can control them. Once into forest roads and trails this weed can scarcely be dislodged by any method deemed practical. You are therefore encouraged to keep in touch with the Ministry of Agriculture and the Prince George regional district's weed advisory committee.
Editor

In his letter in the Winter 1978 issue Cliff Whitfield hopes that "educational systems are taking advantage of the wealth of down-to-earth information ForesTalk offers." I would like to reassure him that I find the articles in ForesTalk very timely for my courses in Forest Resource Technology, and frequently use them as assigned reading, particularly on forest management issues.

As a professional forester I share the concern expressed by Mickey Trew in his letter for the future of forestry in B.C., but I am optimistic that the new breed of forester (and forest technologist) is far more aware of the need for better management than his predecessors. I sense a change in the Forest Service attitude already, from "logging consciousness" to "forestry awareness," as the new breed infiltrates the ranks with his/her better training in ecology, soils, silviculture, and forest management. At the College of New Caledonia we are doing our best to prepare forest technologists for their impending involvement in intensive forestry, but we must "sell" forestry to the public as well.

R.B. Dickens, Instructor
Forest Resource Technology
The College of New Caledonia
Prince George, B.C.

In "Chewers of Wood" by Tony Gregson, ForesTalk Summer, 1978, credits for the first three photos should have gone to the Canadian Forestry Service, not to me. I happen to be in custody of the CFS mountain pine beetle slide collection as part of my assignment with the CFS. The collection dates back to the early 1950s and contains photographs taken by numerous individuals. For the record please note that in "Chewers of Wood" the aerial view of the Klinaklini River Valley was photographed by D. Doidge, a mountain pine beetle in flight by Dr. R.F. Shepherd and P.S. Debnam; and the vertical beetle galleries by Dr. H.S. Whitney and H.S. Gates. These photographs were taken during the course of CFS research work on mountain pine beetle.

H.S. Whitney
Canadian Forestry Service
Pacific Forest Research Centre
Victoria, B.C.

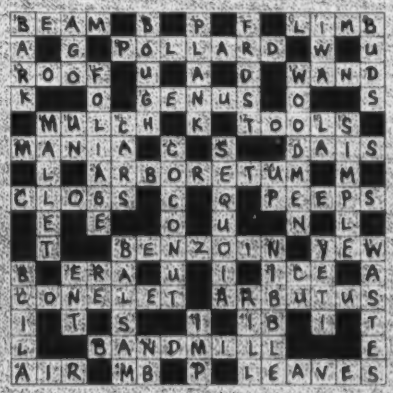
Letters to the editor provide an opportunity for our readers to discuss topics arising out of ForesTalk. Letters for publication must carry the sender's name and address. Views published are not necessarily endorsed editorially. ForesTalk reserves the right to edit for publication.

CORRECTION

(We're fast, but not that fast.)

The article "Taking Inventory" in the Fall 1978 issue of ForesTalk contained a description of the Ministry of Forests' new Interactive Graphic Design System (IGDS), a computer-based system which processes and displays information with great speed. IGDS is being used to store and display vast amounts of information on the province's forest resource. Perhaps the most important function of IGDS will be to store the 7,320 survey maps on which all 47 million hectares of Crown-managed forest land have been recorded. As stated in the article, it will take approximately three years' work at two shifts a day to convert all existing inventory data to the IGDS. However, the caption accompanying a photograph of the IGDS display screen stated erroneously that the survey maps were already stored in the system. Our apologies to everyone affected by this error.

Answers for ForesTalk Crossword
(see page 9)



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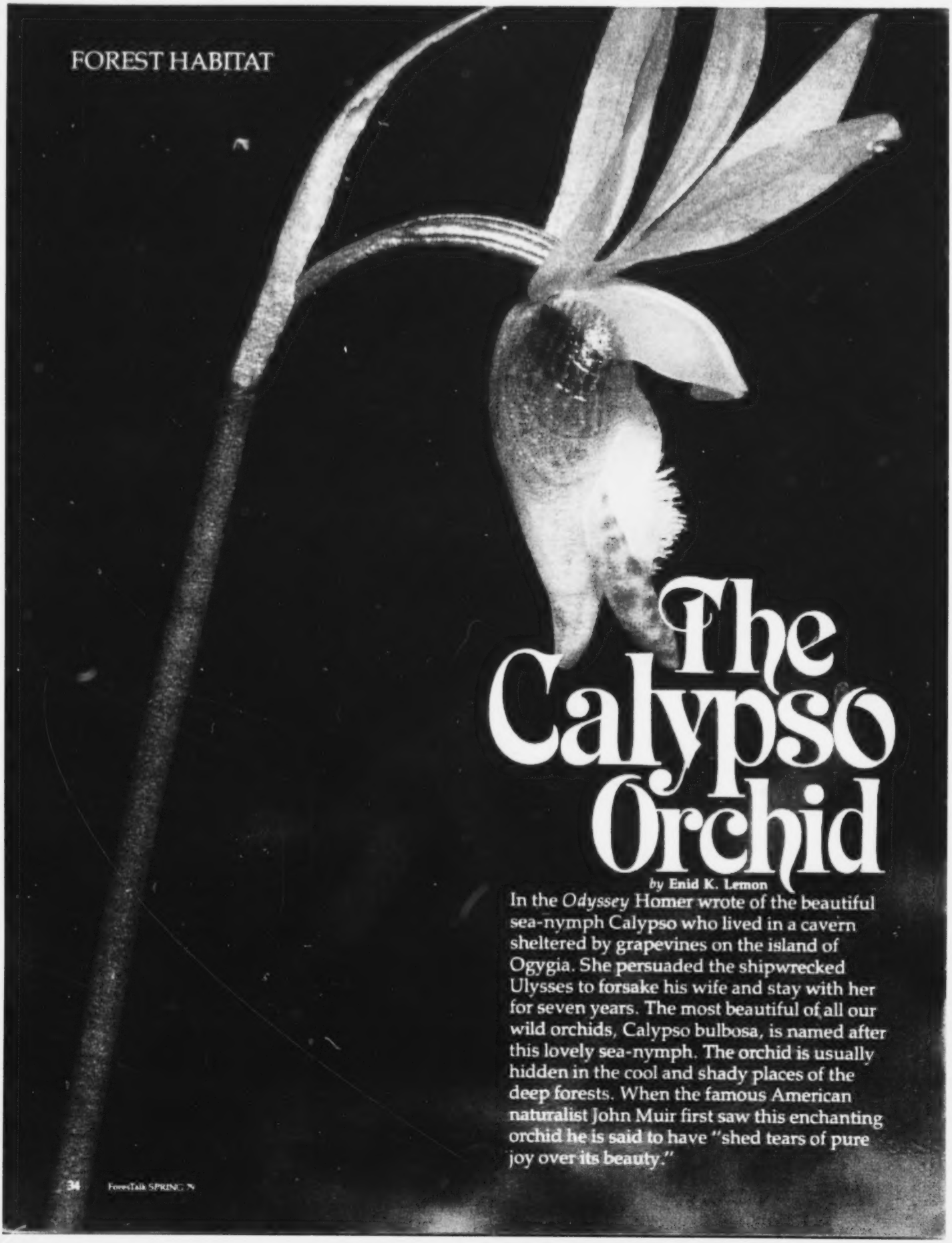


The Calypso Orchid

by Enid K. Lemon

In the *Odyssey* Homer wrote of the beautiful sea-nymph Calypso who lived in a cavern sheltered by grapevines on the island of Ogygia. She persuaded the shipwrecked Ulysses to forsake his wife and stay with her for seven years. The most beautiful of all our wild orchids, Calypso bulbosa, is named after this lovely sea-nymph. The orchid is usually hidden in the cool and shady places of the deep forests. When the famous American naturalist John Muir first saw this enchanting orchid he is said to have "shed tears of pure joy over its beauty."

Fortunately, the range of the Calypso is extensive. It is found throughout the north temperate zone in North America, Europe and Asia. In North America it grows as far south as Maine in the east, all across the continent from Labrador to Alaska, and as far south as California and Arizona in the west. The best environment for the Calypso, however, is its northern range.

The great Swedish botanist Carolus Linnaeus first named the orchid over 200 years ago. When he found it in his native Sweden he thought it belonged to the Cypripedium genus, owing to its shoe-shaped lip. Eventually, in 1842, United States botanist William Oakes decided that it belonged to a genus of its own where it remains today.

No other orchid can boast so many common names: fairy slipper, deer-head orchid, venus slipper, pink slipper orchid, lady's slipper, false lady's slipper, Cytherea (one of its earlier generic names) and hider-of-the-north — the common name given to this flower by Linnaeus. (Some of these names are also used for other orchids, which points out the importance of accurate scientific nomenclature.)

One of nature's masterpieces, unmatched in all the woodland flowers, the Calypso orchid is a marvel of beauty and design. The large lip resembles a low pointed shoe hung up by its heel with the opening in the front. Within this opening, the sole and sides of the shoe are thickly streaked with broad, interrupted lines of dark reddish-brown, and a paler shade can be seen through the outer side of the flower.

The shoe of the Calypso has overlapping edges in the front of the opening, from which falls down a delicate and partially transparent apron daintily spotted with flecks of rich purple. At the top of the apron is a white (coastal) or yellow (inland) beard fashioned from hairs which look like spun glass.

Below the sepals and petals, which are alike, there juts out a column, suspended like a canopy over the lip. Behind this column are hidden the stigma and the single fertile anther with its waxy pollen. Orchids are insect pollinated, the bumblebee being most closely associated with the Calypso. The insect is attracted by the fragrance and alights on the lip, expecting to find a source of nectar. As the bee attempts to enter the flower the waxy pollen sticks to its body and is eventually carried to another flower, thus preventing the orchid from pollinating itself. The hundreds of minuscule seeds which develop are then wind-borne to other parts of the forest.

These tiny seeds do not carry a carbohydrate food supply which is necessary for successful growth. Therefore an outside food source must be available to help the embryo in the seed to develop. This food is a specific fungus whose microscopic threads penetrate the seed coat to supply the necessary sugars for germination.

Besides this very delicate method of reproduction, temperature, soil and moisture conditions must be ideal. Luckily, owing to the vast numbers of seeds produced, a very small percentage of success is sufficient to maintain the species. Also, once the plant is established it spreads from the original corm by rhizomes, which are rootlike stems. This produces the beautiful grouping of the orchids.

In late summer or early autumn the Calypso produces from each corm one basal leaf, which is dark green, roundish in shape, ribbed and slightly crinkled. In its bed of moss on the forest floor it survives rain, frost and snow. In the spring a mature corm will grow a single scape, or stem, which will have only one bloom.

The Calypso orchid is one of the flowers that is being considered for the endangered species list by the Federation of British Columbia Naturalists. This is not surprising when you consider that urban sprawl is taking over many of its original habitats. Logging is also detrimental to the ecology of the orchid. Another factor threatening its survival is the delicate way the small corm is attached to the forest duff by just a few thread-like fibres. These are broken very easily if one attempts to pick the blossom.

There is an even rarer variety of this beautiful orchid, the *alba* or white Calypso. A glorious clump grew for many years in the Thomas S. Francis Park near Victoria, visited and photographed by scores of people who watched it grow from a single flower to nine or ten, then mysteriously disappear. This variety has only been recorded in a very few areas on southern Vancouver Island.

The beauty of the Calypso orchid has impressed many people. In his book on orchids D.S. Correll wrote: "Few, if any of our native orchids possess the sheer beauty and loveliness of the Fairy Slipper. The first time I came upon this little orchid in a dense primeval forest in northern British Columbia, I looked at the flowers with the feeling that at last I was indeed looking upon the most beautiful terrestrial orchid in North America."

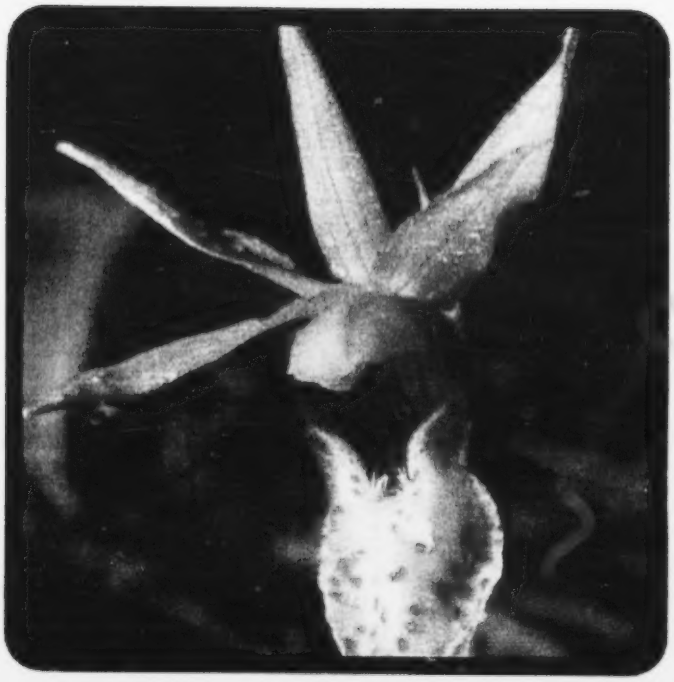
The temptation to try and transplant the Calypso should be resisted, as success is usually short lived. Is it not better to leave them in their natural habitat and hope — in spite of man's activities — that they will be able to survive?

(above) The delicate Calypso orchid is usually hidden in the cool and shady places of the deep forests and is being considered for the endangered species list in B.C.

A very rare variety of the Calypso orchid is the alba or white Calypso. A glorious clump of the white Calypso grew for many years in a park near Victoria, then mysteriously disappeared.

(opposite page) The Calypso orchid is the most beautiful of B.C.'s wild orchids. It is known by a variety of names including fairy slipper, venus slipper, lady's slipper and false lady's slipper.

PHOTO E.E. LEBEN



ForesTalk

RESOURCE MAGAZINE

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Ministry of Forests
HONOURABLE TOM WATERLAND, MINISTER